

No. 13 — *The Genus Micrathena (Araneae, Argiopidae)*
in Central America

BY ARTHUR M. CHICKERING

The genus *Micrathena* Sundevall, 1833 with its numerous species, more or less conspicuous webbing, and often gaudy coloration constitutes an important segment of the arthropod fauna of Central America. For more than thirty years, during repeated visits to Panama and nearby regions, I have been collecting members of this genus with the intention of publishing the results of my study of all species appearing in my collections. Upon the advice of other araneologists I have recently extended my study to include the whole of Central America. In order to aid me in this work all specimens of the genus in the Museum of Comparative Zoology at Harvard College have been turned over to me for study. During the summer of 1958, while on a fellowship from the John Simon Guggenheim Memorial Foundation, I was able to work on the extensive collections in the British Museum (Natural History) where I had access to most of the material which furnished the basis for the work of the two Pickard-Cambridges published in the *Biologia Centrali-Americana*. A few days were also spent in the Oxford University Museum where a portion of the Pickard-Cambridge collection is kept.

Acknowledgements are due and gratefully rendered to the following named individuals and organizations for their numerous courtesies, support, and encouragement of my work for many years: The John Simon Guggenheim Memorial Foundation for its financial aid during two successive years; Dr. G. Owen Evans, Department of Zoology, British Museum (Natural History), and his staff of co-workers all of whom gave me very friendly encouragement and the loan of important specimens for the pursuit of my work; Professor G. C. Varley and his staff of co-workers at the Oxford University Museum who gave me access to valuable specimens for a brief period and then extended material on loan as a further aid; Dr. A. S. Romer, Director, Dr. P. J. Darlington, Jr., Curator of Insects, Dr. Herbert W. Levi, Associate Curator of Arachnology, and Miss Nelda E. Wright, Editor of Publications, all of the staff of the Museum of Comparative Zoology at Harvard College.

The problem of evolution and interspecific relationships in the genus *Micrathena* are exceedingly interesting, often complex, baffling, and difficult to trace. Females tend to exhibit a high

degree of abdominal spination involving many different patterns, and often show strongly contrasting and variable color patterns. The males, on the other hand, as adults usually lack definite spines, exhibit much less gaudy coloration, are greatly reduced in size, and possess a set of complex variations in the minute structure of their secondary sexual organs and related parts. The high degree of sexual dimorphism has made it extremely difficult to match adult males with the proper females. Moreover, adult males are relatively infrequent in collections. When young the sexes often resemble each other rather closely and this fact can sometimes be used as an aid in matching the sexes accurately.

F. Pickard-Cambridge (1904) included a total of thirty-one species in his treatment of the genus *Micrathena*. One of these (*A. fericulum* O. P.-Cambridge) has been transferred to the genus *Ildebaha* Keyserling. Of the remaining thirty species, five had both sexes fully recognized, seven were known only from males, and the remaining nineteen were known only from females.

So far as I have been able to determine up to the present time, a total of forty species of the genus *Micrathena* have been more or less definitely reported from Central America. Eight of these were males unassociated with females; six species included both sexes; twenty-six species were known only from females. As will be shown in the appropriate places in this paper, all four species described as new by Chamberlin and Ivie (1936) have been synonymized with already known species. It now seems quite certain that *M. sedes* (Getaz) is really *M. sexspinoso* (Hahn). It is now generally known that *M. cornigera* (O. P.-Cambridge) is the male of *M. sexspinoso* (Hahn) and that *M. longicauda* (O. P.-Cambridge) is the male of *M. horrida* (Taczanowski). It has now been possible to complete the identification of the male of *M. schreibersi* (Perty). *M. clypeata* (Walek.), until recently considered to be distinctly a South American species, is now known to be well established in Panama. In addition to the changes noted above, I have been obliged to recognize and describe nine new species, thus bringing the revised list to forty-three as now reported from Central America. Among these are twenty different kinds of males, nine of which are still unassociated with the proper females. The complete list as the

species are understood at the present time may be given as follows:

- M. bimucronata* (O. P.-Cambridge), 1899
- M. brevipes* (O. P.-Cambridge), 1890
- M. catenulata* F. P.-Cambridge, 1904
- M. clypeata* (Walck.), 1805
- M. crassa* (Keyserling), 1863
- M. disjuncta* sp. nov.
- M. donaldi* sp. nov.
- M. duodecimspinoso* (O. P.-Cambridge), 1890
- M. fidelis* (Banks), 1909
- M. flaveola* (C. L. Koch), 1839
- M. funebris* (Banks), 1898
- M. furcula* (O. P.-Cambridge), 1890
- M. gladiola* (Walck.), 1841
- M. gracilis* (Walck.), 1805
- M. granulata* F. P.-Cambridge, 1904
- M. horrida* (Taczanowski), 1873
- M. inaequalis* F. P.-Cambridge, 1904
- M. insolita* sp. nov.
- M. macfarlanei* sp. nov.
- M. macilentata* sp. nov.
- M. militaris* (Fabricius), 1775
- M. mitrata* (Hentz), 1850
- M. mirifica* sp. nov.
- M. modica* sp. nov.
- M. molesta* sp. nov.
- M. parallela* (O. P.-Cambridge), 1890
- M. patruelis* (C. L. Koch), 1839
- M. petersi* (Taczanowski), 1872
- M. quadriserrata* F. P.-Cambridge, 1904
- M. saccata* (C. L. Koch), 1836
- M. sagittata* (Walck.), 1841
- M. schreibersi* (Perty), 1833
- M. serrata* F. P.-Cambridge, 1904
- M. sexspinoso* (Hahn), 1822
- M. spinulata* F. P.-Cambridge, 1904
- M. striata* F. P.-Cambridge, 1904
- M. subflava* sp. nov.
- M. subspinoso* F. P.-Cambridge, 1904
- M. trapa* (Getaz), 1891
- M. triserrata* F. P.-Cambridge, 1904
- M. uncata* F. P.-Cambridge, 1904
- M. vitiosa* (O. P.-Cambridge), 1890
- M. zilehi* Kraus, 1955

Holotypes of all new species described in this paper will be deposited in the Museum of Comparative Zoology at Harvard College. *M. donaldi* sp. nov. is named for my son who accompanied me on two very pleasant and productive collecting trips to Panama. *M. macfarlanei* sp. nov. is named for Mr. D. Macfarlane, Commonwealth Institute of Entomology, with whom I was very pleasantly associated during my period of work in the British Museum (Natural History) in the summer of 1958.

Genus *MICRATHENA* Sundevall, 1833

A comprehensive definition of the genus *Micrathena* Sundevall is very difficult to draw up because of the great differences which exist between males and females and even among the two sexes themselves. For the present I am simply adopting what I consider to be the general understanding among araneologists at the present time. I cannot do better than to accept the definition essentially as given by Reimoser (1917) in his treatment of the whole genus as he understood it at the time of the publication of his paper.

No attempt is made to include all citations which have appeared in the literature on this genus. Only those which are considered as particularly pertinent are given here. Those who desire more extensive bibliographies are referred to Roewer (1942) and Bonnet (1957).

Because of unusual difficulties, no satisfactory key to the females in this genus has been worked out. This is in part due to the fact that puzzling variations in spination and some other features occur quite frequently. The accompanying key to the males should be an aid in identification of the different members of this sex.

Key to the Species of MICRATHENA in Central America

Males

1. With a ventral hook on first coxa and a corresponding ridge and groove on second femur (*clypeata*, *disjuncta*, *duodecimspinosa*, *furcula*, *macilenta*, *mitrata*, *parallela*, *patruelis*) 2
- 1a. Without any ventral hook on first coxa and without a corresponding ridge and groove on second femur (*brevipes*, *donaldi*, *gracilis*, *granulata*, *horrida*, *mirifica*, *modica*, *sagittata*, *schreibersi*, *sexspinosa*, *uncata*, *vitiosa*) 9

2. Carapace with three pairs of clearly defined dorsolateral foveae
..... *clypeata*, p. 400
- 2a. Carapace without three pairs of clearly defined dorsolateral foveae
 (*disjuncta*, *duodecimspinosa*, *furcula*, *macilenta*, *mitrata*, *parallela*,
 patruelis) 3
3. Abdomen at least twice as long as wide (*duodecimspinosa*, *furcula*, *ma-*
 cilenta, *mitrata*, *parallela*) 4
- 3a. Abdomen less than twice as long as wide (*disjuncta*, *patruelis*) 7
4. With palpal tibia considerably wider than long (*macilenta*, *mitrata*,
 parallela) 5
- 4a. With palpal tibia not notably wider than long (*duodecimspinosa*, *fur-*
 cula) 8
5. Abdomen with clearly evident spinules at posterior end (*macilenta*,
 parallela) 6
- 5a. Abdomen with no clearly defined spinules at posterior end
 *mitrata*, p. 435
6. Basal palpal tarsal hook nearly as broad at tip as long (Fig. 137) ..
 *parallela*, p. 443
- 6a. Basal palpal tarsal hook not nearly as broad at tip as long (Fig. 104)
 *macilenta*, p. 432
7. Abdomen nearly rectangular in outline (Fig. 143) ... *patruelis*, p. 445
- 7a. Abdomen more rounded laterally; not so nearly rectangular in outline
 (Fig. 26) *disjuncta*, p. 403
8. Abdomen with definite tubercles at posterior end, indicating suppressed
 spines *duodecimspinosa*, p. 408
- 8a. Abdomen without definite tubercles at posterior end, indicating sup-
 pressed spines *furcula*, p. 416
9. Abdomen slender, at least twice as long as broad (*brevipes*, *gracilis*,
 granulata, *horrida*, *modica*, *sagittata*, *schreibersi*, *sexspinosa*, *uncata*)
 10
- 9a. Abdomen not so slender, about twice as long as broad or less than
 twice as long as broad (*donaldi*, *mirifica*, *vitiosa*) 18
10. Abdomen with a caudal-like extension (Figs. 75, 86; *gracilis*, *horrida*)
 11
- 10a. Abdomen without any caudal-like extension (*brevipes*, *granulata*, *mo-*
 dica, *sagittata*, *schreibersi*, *sexspinosa*, *uncata*) 12
11. Base of bulb of palpal tarsus with a rounded knob fitting into a cor-
 responding concavity in the tarsal hook (Fig. 76) .. *gracilis*, p. 421
- 11a. Base of bulb of palpal tarsus without such a knob and corresponding
 concavity as in *gracilis* *horrida*, p. 424
12. Palpal tarsal hook extended into a long, distally curved, sickle-like
 structure (Fig. 180) *sexspinosa*, p. 456
- 12a. Palpal tarsal hook not extended into a distinctly sickle-like structure
 (*brevipes*, *granulata*, *modica*, *sagittata*, *schreibersi*, *uncata*) 13
13. Abdomen constricted in the middle and rounded posteriorly (Fig. 161)
 *schreibersi*, p. 452

- 13a. Abdomen not constricted in the middle nor smoothly rounded posteriorly (*brevipes*, *granulata*, *modica*, *sagittata*, *uncata*) 14
14. Palpal tibia extended distally into a pair of sharp spines (Fig. 156) *sagittata*, p. 449
- 14a. Palpal tibia not extended distally into a pair of sharp spines (*brevipes*, *granulata*, *modica*, *uncata*) 15
15. Palpal tibia extended into a series of three bluntly rounded outgrowths (Fig. 7) *brevipes*, p. 398
- 15a. Palpal tibia not extended into a series of three bluntly rounded outgrowths (*granulata*, *modica*, *uncata*) 16
16. Palpal tarsal hook a strongly chitinized and granulated plate (Figs. 81, 82) *granulata*, p. 423
- 16a. Palpal tarsal hook without a strongly chitinized and granulated plate; tarsal hook tending toward the type more frequently found in the genus (*modica*, *uncata*) 17
17. First femur with a group of modified ventral spines near middle of the segment (Fig. 203) *uncata*, p. 466
- 17a. First femur without the group of modified spines near middle of segment *modica*, p. 439
18. Abdomen with four pairs of definite but small spines (Fig. 31) *donaldi*, p. 405
- 18a. Abdomen without any definite spines (*mirifica*, *vitiosa*) 19
19. Palpal tarsal hook extended into a quadrate, concave, finely granulose plate; with remains of three pairs of spines in the form of tubercles on abdomen *vitiosa*, p. 466
- 19a. Palpal tarsal hook not extended into a quadrate, concave, finely granulose plate; abdomen without visible remains of tubercles on abdomen *mirifica*, p. 437

MICRATHENA BIMUCRONATA (O. P.-Cambridge), 1899

(Figures 1-5)

Aerosoma bimucronatum O. P. Cambridge, 1899

M. bimucronata F. P.-Cambridge, 1904

M. bimucronata Petrunkevitch, 1911

M. bimucronata Reimoser, 1917

M. bimucronata Chickering, 1931

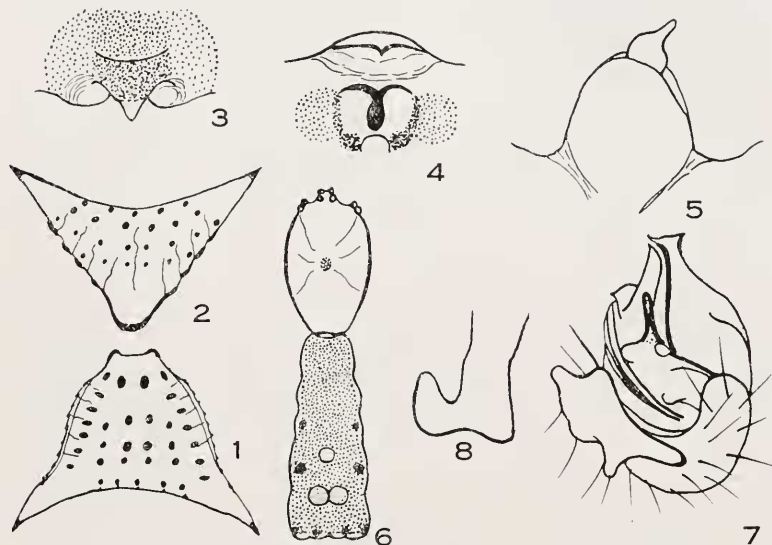
M. bimucronata Mello-Leitao, 1932

M. bimucronata Roewer, 1942

M. bimucronata Bonnet, 1957

Several specimens of this species in the British Museum (Natural History) from Guatemala have been examined and found to agree well with specimens from Costa Rica and Honduras now in the collections of the Museum of Comparative Zoology at Harvard College. The male is still unknown. One of the specimens

in the collection of the Museum of Comparative Zoology has been selected as the hypotype from which the following facts have been derived: Total length 5.85 mm.; the abdomen has a short conical tubercle at each anterolateral corner (one specimen was found to have these tubercles drawn out into short spines thus illustrating the variability of the species) and a long stout spine at each posterolateral angle (Figs. 1, 2); the carapace has a



External Anatomy of *Micrathena*

Figures 1-5, *M. bimucronata*

Figures 6-8, *M. brevipes*

Fig. 1. Abdomen of female, dorsal view.

Fig. 2. Posterior surface of abdomen to show appearance of spines.

Figs. 3-5. Epigynum; from below, posterior surface, and right lateral view, respectively.

Fig. 6. Body of *M. brevipes*, dorsal view.

Fig. 7. Right palpal tarsus and tibia.

Fig. 8. Palpal tarsal hook, more enlarged.

well defined central fovea and two pairs of moderately clear dorsolateral foveae; the characteristics of the epigynum are shown in Figures 3-5. The species is now known from Guatemala, Costa Rica and Honduras.

MICRATHENA BREVIPES (O. P.-Cambridge), 1890

(Figures 6-8)

Acrosoma brevipes O. P.-Cambridge, 1890*A. brevipes* Keyserling, 1892*M. brevipes* F. P.-Cambridge, 1904*M. brevipes* Petrunkevitch, 1911*M. brevipes* Reimoser, 1917*M. brevipes* Petrunkevitch, 1925*M. brevipes* Chickering, 1931*M. brevipes* Roewer, 1942*M. brevipes* Bonnet, 1957

This species was reported from Honduras in 1931 (Chickering) but the specimens seen at that time are not now in the collection and cannot, therefore, be re-examined for accuracy of determination. My only opportunity to study the species carefully came during my period of work in the British Museum (Natural History) in the summer of 1958. Two specimens are now in the vial marked "type" but both abdomens are detached and one may not belong to *M. brevipes* (O.P.-Cambridge). Both cephalothoraces and attached parts are in good condition. The abdomen (Fig. 6) is injured but appears to be similar to that of the male of *M. sexspinosa*. The chief features of the palpal tarsus and tibia are shown in Figures 7 and 8. Keyserling's description (1892) appears to be accurate and detailed. Total length about 4.5 mm. The legs appear to be devoid of significant spines. The first coxae lack the ventral hook and the second femora lack the corresponding ridges and grooves. The female remains unknown. The species appears to be widely distributed in Central America and has been reported from Mexico, Guatemala, Honduras, and Panama.

MICRATHENA CATENULATA F. P.-Cambridge, 1904

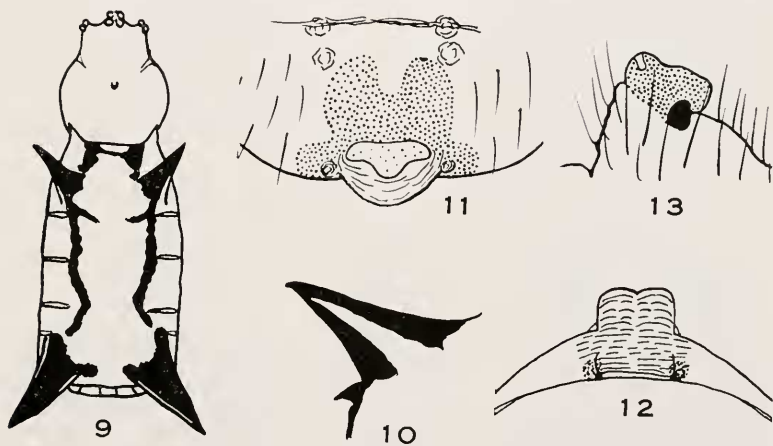
(Figures 9-13)

M. catenulata Petrunkevitch, 1911*M. catenulata* Reimoser, 1917*M. catenulata* Roewer, 1942*M. catenulata* Bonnet, 1957

In the Nathan Banks collection in the Museum of Comparative Zoology I have found several females from Mexico which agree well with specimens in the Pickard-Cambridge collection in the

British Museum (Natural History). I also have two specimens collected by myself in Honduras. Two males were found with the females from Mexico but they are still considered to represent a separate species for reasons which will be given in some detail later in this paper.

Female hypotype. Total length 6.695 mm. One difference between the hypotype and the holotype is in respect to abdominal spines. F. P.-Cambridge stated that the "anterior marginal angles" of the abdomen were prominent but did not bear spines. Apparently this is a variable feature because spines occur in these regions in some specimens but not in all. Short anterior marginal spines are extended from the corners of the abdomen in the hypotype. There are also two pairs of relatively large robust spines in dorsal anterior and posterior positions as indicated in Figure 9. It was also stated in the original descriptions



External Anatomy of *Micrathena*

Figures 9-13, *M. catenulata*

Fig. 9. Dorsal view of body.

Fig. 10. Posterior spine and cusp; lateral view from right side.

Figs. 11-13. Epigynum from below, in posterior view, and in profile from right side, respectively.

that immature specimens have a short cusp below each posterior dorsal spine. I have found that this also sometimes occurs in mature females (Fig. 10). The head portion of the carapace is only moderately raised. The sternum is not notably produced

posteriorly. The features of the epigynum are shown in Figures 11-13. Color in alcohol: the Mexican and Honduran specimens are much lighter in color than the Guatemalan specimens available to F. P.-Cambridge. Apparently the black spots have been reduced and the white parts greatly extended as indicated in Figure 9.

Collection records. The specimens studied by F. P.-Cambridge were from Guatemala. Other specimens available to me in this study are from Escuintla, Chiapas, Mexico, with no date of collection given, and Lancetilla, Honduras, July, 1929.

MICRATHENA CLYPEATA (Walckenaer), 1805

(Figures 14-20)

Epeira clypeata Walckenaer, 1805

M. clypeata Sundevall, 1833

M. clypeata, C. L. Koch, 1838

Plectana clypeata Walckenaer, 1841

M. clypeata Taczanowski, 1879

M. clypeata Simon, 1895

M. clypeata Petrunkevitch, 1911

M. clypeata Reimoser, 1917

M. planata Chamberlin and Ivie, 1936. New synonymy

M. clypeata Chickering, 1936

M. clypeata Roewer, 1942

M. planata Roewer, 1942. New synonymy.

M. clypeata Bonnet, 1957

M. planata Bonnet, 1957. New synonymy.

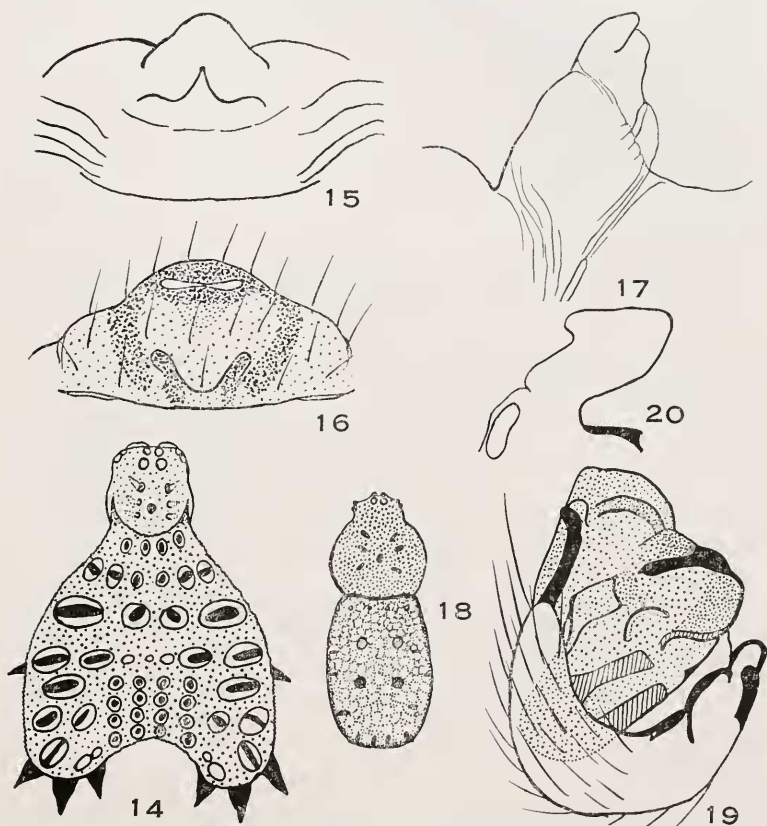
Until comparatively recently this species has been considered strictly South American, but is now known to be well established in Panama. Chamberlin and Ivie (1936) have given a detailed description of the species under the name *M. planata*.

Female hypotype. The extremely flattened form of the abdomen, the numerous smoothly chitinized dorsal abdominal spots, together with the ten abdominal spines (Fig. 14) should make identification certain. Figures 15-17 show the chief features of the epigynum.

Male hypotype. Total length 3.9 mm. With body extremely flattened (Fig. 18); with a complete but thin dorsal abdominal shield. The first coxa has a distal, ventral, retrolateral hook and the second femur has a corresponding groove and ridge near its proximal end nearly dorsal in position but on the prolateral surface. Palp: the tarsal hook has a characteristic form; this

and other features of the organ are shown in Figures 19 and 20.

Collection records. All of my records of this species in Panama have come from Barro Colorado Island, C. Z. The female hypotype was taken in August, 1954; the male hypotype in August, 1950. Two other males are in the collection: July,



External Anatomy of *Micrathena*

Figures 14-20, *M. clypeata*

Fig. 14. Dorsal view of body of female.

Figs. 15-17. Epigynum from below, in posterior view, and in profile (more enlarged), respectively.

Fig. 18. Dorsal view of body of male.

Fig. 19. Palpal tarsus of male.

Fig. 20. Palpal tarsal hook, retrolateral view (more enlarged).

1924 (Banks) and July, 1936. Females have been taken from June to August, 1934, 1936, 1950, and 1954. Chamberlin and Ivie (1936) reported both sexes from my collection of 1928.

MICRATHENA CRASSA (Keyserling), 1863

(Figures 21-25)

Acrosoma crassum Keyserling, 1863

A. crassum Keyserling, 1892

M. crassa Simon, 1895

M. crassa Petrunkevitch, 1911

M. crassa Reimoser, 1917

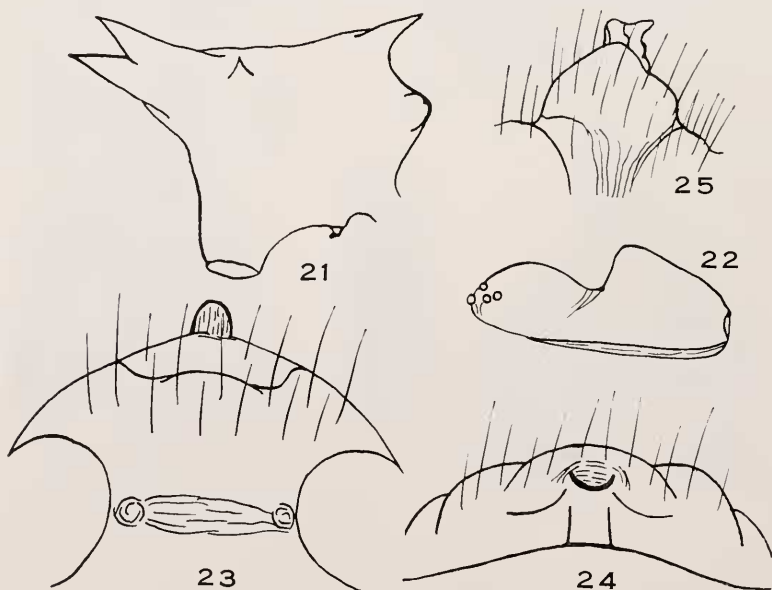
M. crassa Petrunkevitch, 1925

M. crassa Roewer, 1942

M. crassa Bonnet, 1957

M. crassa Chickering, 1960

Petrunkevitch (1925) reported this species from Panama but it has not appeared in my collections nor have I found it recorded



External Anatomy of *Micrathena*

Figures 21-25, *M. crassa*

Fig. 21. Abdomen, lateral view.

Fig. 22. Cephalothorax, lateral view.

Figs. 23-25. Epigynum; from below, posterior view, and in profile, respectively.

by any other worker. During the summer of 1958 I had an opportunity to study the species in the Keyserling collection in the British Museum (Natural History) and I have commented on it elsewhere (1960). The most significant features of the species may be given as follows: There is considerable variation in the size of the females with the length varying from about 7.6 to 8.5 mm.; head and thorax well separated by a deep transverse groove; the median thoracic fovea is clearly defined; behind the median fovea the thorax rises very sharply into a pronounced gibbosity (Fig. 22); there are no clearly defined dorsolateral foveae; sternum only moderately convex; abdomen with four pairs of spines as shown in Figure 21; features of the epigynum as shown in Figures 23-25. Collection records are restricted to Colombia and Panama. The male is still unknown.

MICRATHENA DISJUNCTA sp. nov.

(Figures 26-30)

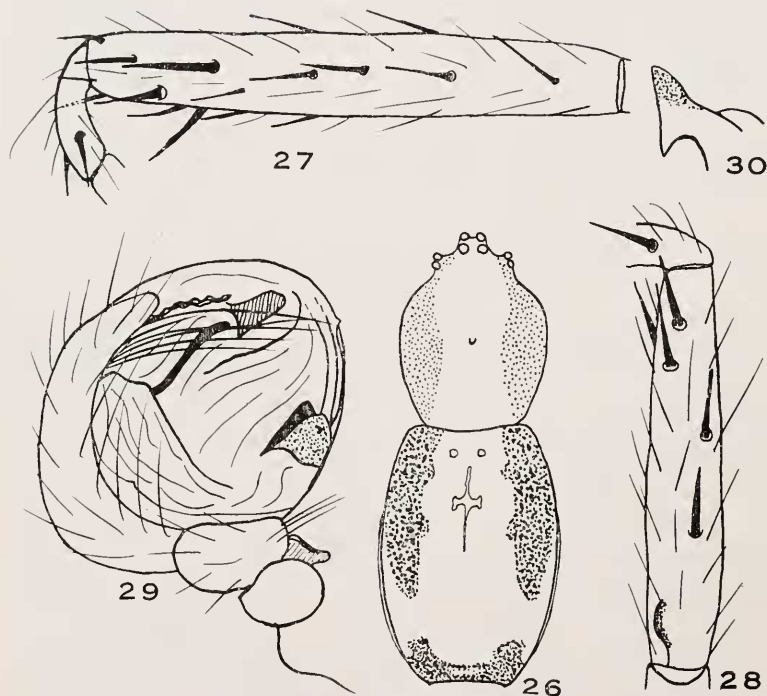
Male holotype. Total length 3.705 mm. Carapace 1.755 mm. long, 1.24 mm. wide opposite interval between second and third coxae where it is widest; .66 mm. tall shortly behind well defined central fovea; rises gently from just behind PME to this region and then descends to posterior border.

Eyes. Eight in two rows as usual. Seen from above, posterior row moderately recurved, anterior row strongly recurved. Seen from in front, anterior row very slightly recurved, posterior row gently procurved, all measured by centers. Ocular tubercles moderately well developed. Central ocular quadrangle only slightly wider behind than in front, slightly wider behind than long. Ratio of eyes AME : ALE : PME : PLE = 5 : 5 : 6.5 : 5 (long diameters used when there are differences). AME separated from one another by nearly two diameters, from ALE by about three diameters. PME separated from one another by nearly five-fourths of their diameter, from PLE by nearly three times their diameter. Laterals only separated by a broad line. Height of clypeus equal to a little more than twice the diameter of AME.

Chelicerae, Maxillae, and Lip. All apparently normal to males of the genus. Fragility of the specimen prevents close examination of such structures as teeth along the fang groove but details appear to be unnoteworthy for the proper description of the holotype.

Sternum. Simple scutiform; moderately convex; terminates bluntly between fourth coxae which are separated by about one-half of their width.

Legs. 1423. Width of first patella at "knee" .16245 mm., tibial index of first leg 10. Width of fourth patella at "knee" .11913 mm., tibial index of fourth leg 10.



External Anatomy of *Microthema*

Figures 26-30, *M. disjuncta*

Fig. 26. Dorsal view of body of male.

Fig. 27. Right first femur, prolateral view.

Fig. 28. Right second femur, prolateral view.

Fig. 29. Male palpal tarsus.

Fig. 30. Palpal tarsal hook, more enlarged.

	Femora	Patellae	Tibiae	Metatarsi	Tarsi	Totals
(All measurements in millimeters)						
1.	1.540	.506	.990	.924	.462	4.422
2.	1.320	.440	.726	.748	.400	3.634
3.	.836	.264	.440	.418	.330	2.288
4.	1.540	.396	.814	.770	.435	3.955
Palp	.198	.0975	.1300	—	.440	.866

With numerous robust spines on legs 1, 2, and 4; those on femora appear to be most significant (Figs. 27-28). First coxa with a ventral hook and second femur with the corresponding proximal, prolateral ridge and groove.

Palp. Most essential features shown in Figures 29 and 30. Both tibia and patella are very short and without special modifications. Tarsal hook similar to that found in several other species.

Abdomen General shape shown in Figure 26. Poorly developed tubercles at posterior end may represent suppressed spines which show in immature males and in adult females.

Color in alcohol. Carapace yellowish white in a broad central stripe with a broad dusky stripe on each side (Fig. 26). Legs yellowish with variations. Mouth parts and sternum nearly white. Abdomen: dorsum with a broad, central, broken, white stripe and a semi-transparent cross in the middle; nearly black across posterior end and on each side a nearly black stripe (Fig. 26); just lateral to the black stripe are narrow, irregular, brownish stripes.

Type locality. The holotype male is from Barro Colorado Island, C. Z., January, 1958. No paratypes have appeared in my collection. The female is unknown.

MICRATHENA DONALDI sp. nov.

(Figures 31-34)

Male holotype. Total length 4.68 mm. Carapace 1.917 mm. long; 1.125 mm. wide opposite second coxae where it is widest; median eyes on a prominent tubercle and lateral eyes on two confluent tubercles; only slightly raised behind median thoracic fovea.

Eyes. Eight in two rows as usual; viewed from above, both rows strongly recurved; viewed from in front, both rows procurved. Central ocular quadrangle wider behind than in front in ratio of 25 : 17, wider behind than long in ratio of 25 : 22.

Ratio of eyes AME : ALE : PME : PLE = 8 : 7 : 10 : 8. AME separated from one another by five-eighths of their diameter, from ALE by seven-fourths of their diameter. PME separated from one another by nearly their diameter, from PLE by three-halves of their diameter. LE separated from one another by about the diameter of AME. Height of clypeus equal to nearly twice the diameter of AME. Clypeus sharply slanted backward because of strong development of median ocular tubercle.

Chelicerae. Moderately well developed; parallel. Teeth along fang groove not observed because of danger of injury to holotype.

Maxillae and *Lip*. As usual in males of the genus, without noteworthy features.

Sternum. Moderately convex; strongly and irregularly corrugated throughout; sternal suture procurved; with well developed lateral sternal tubercles and low tubercles opposite coxae 1-3 and with a blunt, low tubercle at posterior end which is not extended between fourth coxae which are only slightly separated.

Legs. 4123. Width of first patella at "knee" .12996 mm., tibial index of first leg 10. Width of fourth patella at "knee" .11913 mm., tibial index of fourth leg 7.

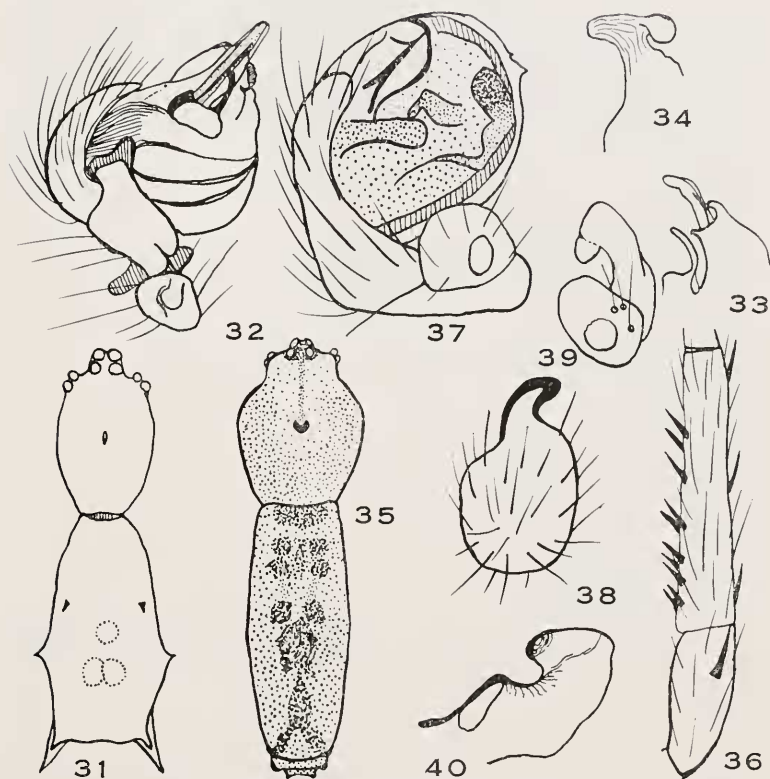
	Femora	Patellae	Tibiae	Metatarsi	Tarsi	Totals
	(All measurements in millimeters)					
1.	1.170	.450	.845	.747	.520	3.732
2.	1.170	.410	.780	.650	.520	3.530
3.	.780	.270	.520	.440	.396	2.406
4.	1.625	.390	1.200	1.105	.625	4.945
Palp	.528	.176	.396	—	.726	1.826

Leg spines very sparsely and poorly developed. Coxal ventral hook and corresponding second femoral groove and ridge lacking.

Palp. General characters like those of male of *M. sagittata* but with tibia resembling that of *M. brevipes* (Figs. 32-34). The tibia appears to be quite distinctive and the same can be said for the tarsal hook.

Abdomen. General form shown in Figure 31. Abdominal spines much more prominent than usual in mature males; two posterior pairs are relatively large and conspicuous; there is a pair of short marginal spines somewhat behind the middle and another pair of very small dorsal spines somewhat in front of the middle; these suggest that the female should be found among

those with four pairs of more or less conspicuous abdominal spines such as *M. fidelis* (Banks).



External Anatomy of *Micrathena*

Figures 31-34, *M. donaldi*

Figures 35-40, *M. duodecimspinosa*

Fig. 31. Dorsal view of body of male.

Fig. 32. Left palpal patella, tibia, and tarsus, nearly prolateral view.

Fig. 33. Distal end of palpal conductor and associated structures; different view from that in Fig. 32.

Fig. 34. Palpal basal tarsal hook.

Fig. 35. Dorsal view of male allotype.

Fig. 36. Right second patella and tibia, prolateral view.

Fig. 37. Left palpal tibia and tarsus.

Fig. 38. Posterior surface of cymbium and tarsal hook from a paratype.

Fig. 39. Palpal tibia and tarsal hook.

Fig. 40. Another view of tarsal hook more enlarged; from a paratype.

Color in alcohol. Legs dark brown, almost black, above, but yellowish below. Carapace and sternum a dark mahogany brown. Abdomen: dorsum with three whitish spots as shown in Figure 31; with remaining surface a mosaic of black, whitish, brown, much streaked and dotted.

Type locality. Holotype male from Barro Colorado Island, C. Z., August, 1936. Two paratype males from the same locality, July, 1936. Mr. Banks collected one male in the same locality, July, 1924.

MICRATHENA DUODECIMSPINOSA (O. P.-Cambridge), 1890

(Figures 35-45)

Acrosoma 12-spinosum O. P.-Cambridge, 1890

Acrosoma 12-spinosa Keyserling, 1892

M. 12-spinosa F. P.-Cambridge, 1904

A. 12-spinosa Banks, 1909

M. duodecimspinosa Petrunkevitch, 1911

M. duodecimspinosa Reimoser, 1917

M. duodecimspinosa Chiekerling, 1936

M. duodecimspinosa Roewer, 1942

M. duodecimspinosa Kraus, 1955

M. duodecimspinosa Bonnet, 1957

Females of this species have been well described by Keyserling (1892), F. P.-Cambridge (1904), and Reimoser (1917). Abdominal spines are probably the best single clues to identification.

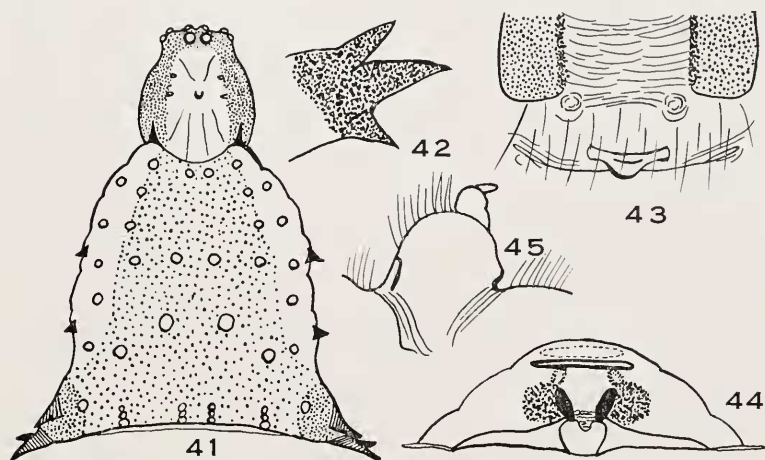
Female hypotype. Total length 7.475 mm. The salient features of body form are shown in Figures 41 and 42. In all of my Panamanian specimens the posterior spines are bright red. Features of the epigynum are shown in Figures 43-45.

Kraus (1955) has recently reported finding immature males but, so far as I have been able to determine, the mature male has never been described. For this reason, one of several males from Boquete, Chiriqui, Panama, has been selected as the allotype and described as follows:

Male allotype. Total length 4.973 mm. Carapace 1.885 mm. long, 1.43 mm. wide opposite interval between second and third coxae where it is widest; median fovea well developed; nearly level throughout from PME to posterior declivity (Fig. 35).

Eyes. Eight in two rows as usual; viewed from above, both rows strongly recurved; viewed from in front, anterior row slightly procurved and posterior row strongly procurved, all

measured by centers. Central ocular quadrangle wider behind than in front in ratio of 10 : 9; wider behind than long in about the same ratio. Ratio of eyes AME : ALE : PME : PLE = 6 : 4.5 : 8 : 5. AME separated from one another by about their diameter, from ALE by about 3.3 times their diameter. PME separated from one another by about their diameter, from PLE by 2.5 times their diameter. Laterals only slightly separated. Laterals on a rather marked tubercle. Height of clypeus equal to about 1.5 times the diameter of AME.



External Anatomy of *Micrathena*

Figures 41-45, *M. duodecimspinosa*

Fig. 41. Dorsal view of body of female.

Fig. 42. Spines at posterolateral corner of abdomen; viewed from posterior surface.

Figs. 43-45. Epigynum from below, posterior surface, and in profile (right side), respectively.

Chelicerae. Moderately well developed; essentially parallel; only slightly concave along outer border; basal boss small but clearly present; apparently four teeth on promargin and three on retromargin of well developed fang groove (observed on paratype to avoid injury to allotype).

Maxillae and *Lip*. As usual in the genus; details unnoteworthy.

Sternum. Only slightly convex; extended between all coxae and with posterior coxae only slightly separated.

Legs. 1423. Width of first patella at "knee" .18411 mm., tibial index of first leg 12. Width of fourth patella at "knee" .16245 mm., tibial index of fourth leg 12.

	Femora	Patellae	Tibiae	Metatarsi	Tarsi	Totals
	(All measurements in millimeters)					
1.	1.430	.435	1.105	1.072	.585	4.627
2.	1.300	.422	.845	.910	.520	3.997
3.	.950	.325	.520	.550	.390	2.735
4.	1.820	.390	.910	.975	.500	4.595
Palp	.352	.132	.120	—	.572	1.176

There is a rather poorly developed ventral distal hook on the first coxa and a corresponding short prolateral proximal groove and ridge on the second femur. The first two pairs of legs are notably spiny, particularly the tibiae; the ventral spines on the second tibiae (Fig. 36) are short and robust. Trichobothria are prominent on the tibiae.

Palp. Both patella and tibia are very short. The features of the tarsus and tarsal hook are shown in Figures 37-40.

Abdomen. 3.120 mm. long; continued posterior to spinnerets about four-ninths of total length; remains of posterolateral spines, prominent in females, appear as short tubercles at posterior end. Other features as usual in the genus.

Color in alcohol. Legs brownish with variations; first two darkest. Chelicerae and palps yellowish with palpal tarsus light brown. Lip very dark brown like sternum. Maxillae dark grayish. Carapace brownish with variations. Abdomen with a dark irregular central series of spots and an irregular series of dorso-lateral white spots making a pattern difficult to describe (Fig. 35); venter brownish dappled with yellowish white spots.

Collection records. The hypotype female is from Barro Colorado Island, C. Z., July, 1954. The allotype male is from Boquete, Chiriqui, Panama, July, 1939 at which time several paratype males were also taken. Females and immature males are in the collection from Barro Colorado Island, C. Z., June, 1934; June-July, 1936; June, 1939; July, 1954; January, 1958; France Field, C. Z., August, 1939. Several females are in the collection of the Museum of Comparative Zoology from Rio Jesus Maria, Costa Rica, January (Biolley and Tristan), and also from San Jose, Costa Rica (Valerio). The Cambridges had females from Mexico, Guatemala, and Panama.

MICRATHENA FIDELIS (Banks), 1909

(Figures 46-49)

Aerosoma fidelis Banks, 1909*M. fidelis* Petrunkevitch, 1911*M. fidelis* Reimoser, 1917*M. fidelis* Roewer, 1942*M. fidelis* Bonnet, 1957

This species is, apparently, known only from the holotype female which was very briefly described by its author without illustrations. These facts would seem to warrant a full description in accord with my usual formula. The description is taken directly from the original specimen.

Female holotype. Total length 7.02 mm. Carapace 2.34 mm. long; 2.015 mm. wide opposite second coxae where it is widest; with the median fovea as usual in the genus; cephalic portion somewhat convex behind PME, then transversely depressed just anterior to median fovea; conspicuously swollen just posterior to median fovea.

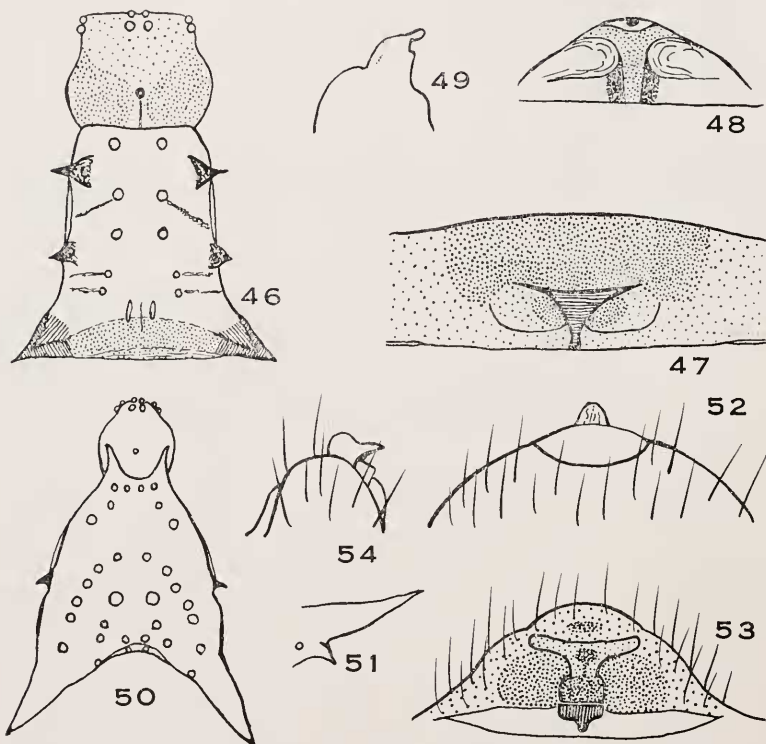
Eyes. Eight in two rows as usual; lateral eyes on a slightly raised tubercle; viewed from above, both rows moderately recurved; viewed from in front, anterior row slightly recurved, posterior row gently procurved; central ocular quadrangle wider behind than in front in ratio of 17 : 14, slightly wider behind than long. Ratio of eyes AME : ALE : PME : PLE = 4.5 : 5 : 7 : 3.5. AME separated from one another by their diameter, from ALE by four times their diameter. PME separated from one another by about five-sevenths of their diameter, from PLE by a little less than three times their diameter. Laterals almost in contact. Height of clypeus equal to a little less than the diameter of AME.

Chelicerae. Robust, vertical, nearly parallel, very convex in front, especially in proximal half; fang fairly robust and evenly curved; promargin of fang groove with four teeth, retromargin with three.

Maxillae and Lip. As usual in the genus; without noteworthy features.

Sternum. Elongate scutiform; quite convex throughout; not continued between coxae; with procurved sternal suture and moderately well developed sternal tubercles at each anterolateral corner. Posterior coxae separated by a little more than one-seventh of their width.

Legs. 1423. Width of first patella at "knee" .352 mm., tibial index of first leg 13. Width of fourth patella at "knee" .264 mm., tibial index of fourth leg 12.



External Anatomy of *Micrathena*

Figures 46-49, *M. fidelis*

Figures 50-54, *M. flaveola*

Fig. 46. Dorsal view of body of female.

Fig. 47-49. Epigynum from below, in posterior view, and in profile from right side, respectively.

Fig. 50. Dorsal view of body of female.

Fig. 51. Lateral view of spines at posterolateral corner of abdomen.

Figs. 52-54. Epigynum from below, in posterior view, and in profile from right side, respectively.

	Femora	Patellae	Tibiae	Metatarsi	Tarsi	Totals
	(All measurements in millimeters)					
1.	2.210	.975	1.800	1.495	.775	7.255
2.	1.950	.855	1.365	1.280	.660	6.110
3.	1.300	.455	.785	.775	.600	3.915
4.	2.405	.715	1.430	1.495	.650	6.695

Legs with numerous spines and low tubercles from which hairs extend. Numerous trichobothria observed on tibiae and metatarsi.

Abdomen. General form and eight spines shown in Figure 46. Otherwise as usual in the genus.

Epigynum. In general quite similar to others in the genus but a profile view seems to show distinctive features (Figs. 47-49).

Type locality. The only specimen known to me is the holotype described by Banks (1909) and collected at Tablazo, Costa Rica (Tristan), September. The male remains unknown.

MICRATHENA FLAVEOLA (C. L. Koch), 1839

(Figures 50-54)

Acrosoma flavescens C. L. Koch, 1839

Plectana flavola Walckenaer, 1841

M. flavola Petrunkevitch, 1911

M. flavola Reimoser, 1917

M. flavola Roewer, 1942

M. flavola Bonnet, 1957

This species has caused me much concern and I still regard its status in Central America as somewhat questionable. The species has been reported from Mexico, Brazil, Dutch Guiana, and Venezuela. I am convinced that it has often been confused with *M. gladiola* (Walckenaer). Some of the specimens assigned to this species and to *M. gladiola* may well belong to other species, perhaps undescribed. I seem to have sound reasons for including the species among the Central American forms treated in this paper but I have had only one specimen for careful study and that was not in prime condition. The following facts are taken from this specimen:

Female hypotype. Total length to posterior border of abdomen between posterior spines 8.5 mm. (considerably larger than described by previous workers). The general form of the body

is shown in Figures 50 and 51. The carapace is somewhat gibbous just behind the central fovea; the sternum is finely rugulose and moderately convex but is not raised into a distinct cone as in *M. gladiola* (Walekenaer). The legs are badly fragmented and unmeasurable in this specimen. The spines appear as shown in Figures 50 and 51 and agree well with descriptions given by other authors who have had numerous specimens with which to work. The features of the epigynum are given in Figures 52-54. Males are still unknown. The hypotype female is from San Jose, Costa Rica, with no date of collection given.

MICRATHENA FUNEBRIS (Banks), 1898

(Figures 55-59)

Acrosoma funebre Banks, 1898

M. funebris Petrunkevitch, 1911

M. funebris Reimoser, 1917

M. funebris Chamberlin, 1924

M. funebris Roewer, 1942

M. funebris Bonnet, 1957

Only the female of this species is known but there are now numerous specimens of this sex in the Museum of Comparative Zoology representing parts of the Banks and Chamberlin collections. Two of the specimens in the Banks collection are labelled "eotypes." In view of the brevity of the original description and the lack of accompanying figures, one of the "eotypes" has been selected and described in accord with my usual procedure.

Female hypotype. Total length 6.825 mm. Carapace 2.275 mm. long, 1.592 mm. wide opposite second coxae where it is widest; more slender than in many species (Fig. 55). Without additional noteworthy features.

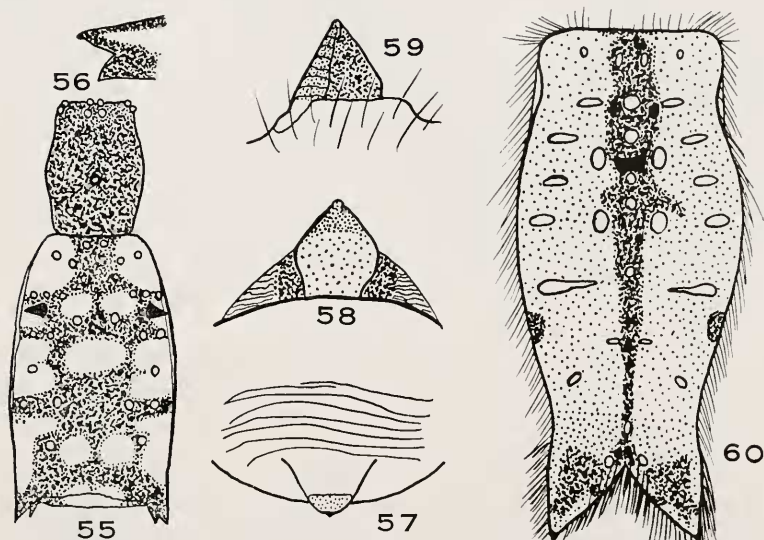
Eyes. Eight in two rows as usual; median eyes and laterals on low tubercles; viewed from above, both rows recurved; viewed from in front, anterior row gently recurved and posterior row procurved, both measured by centers; central ocular quadrangle wider behind than in front in ratio of 4 : 3, wider behind than long in ratio of 16 : 13. Ratio of eyes AME : ALE : PME : PLE = 7.5 : 5.5 : 10 : 6. AME separated from one another by eleven-sevenths of their diameter, from ALE by a little more than four diameters. PME separated from one another by about 1.5 times their diameter, from PLE by three diameters.

Laterals separated from one another by nearly the diameter of ALE. Height of clypeus nearly equal to twice the diameter of AME.

Chelicerae. Apparently as usual in the genus. Impossible to view the fang groove without serious injury to specimen.

Maxillae. Without noteworthy features.

Lip. Wider than long in ratio of 10 : 7; deeply grooved in basal fourth.



External Anatomy of *Micrathena*

Figures 55-59, *M. funebris*

Figure 60, *M. furcula*

Fig. 55. Body of female, dorsal view.

Fig. 56. Abdominal spines at posterolateral angle.

Figs. 57-59. Epigynum from below, from posterior view, and in profile from right side, respectively.

Fig. 60. Body of female in dorsal view.

Sternum. Elongate scutiform; longer than wide at anterior end in ratio of 23 : 18; sternal suture procurved; with low tubercles at anterolateral corners; with a prominent tubercle at posterior end; not extended between fourth coxae which are separated by about one-third of their width.

Legs. 4123. Width of first patella at "knee" .255 mm., tibial index of first leg 13. Width of fourth patella at "knee" .242 mm., tibial index of fourth leg 12.

	Femora	Patellae	Tibiae	Metatarsi	Tarsi	Totals
	(All measurements in millimeters)					
1.	1.755	.650	1.250	1.300	.650	5.605
2.	1.625	.650	.975	1.235	.640	5.125
3.	1.170	.325	.715	.835	.520	3.565
4.	2.405	.585	1.430	1.235	.520	6.175

Apparently the leg spines were present in the usual manner but are now mostly lacking.

Abdomen. The general form of this part of the body is best shown in Figures 55 and 56. There are no anterior spines on the abdomen but six are present as shown. The color pattern appears to be characteristic and shows only minor variations among the numerous specimens from islands in the Gulf of California. Other features as usual in the genus.

Epigynum. Strongly tubercular; somewhat distinctive (Figs. 57-59).

Color in alcohol. In general, very dark brown or black with a rather distinctive pattern of white spots on the dorsum; essentially as described by the author of the species and with little change after long preservation.

Type locality. The original specimens came from Calmalli Mines, Sierra San Nicolas, and Mazatlan, Mexico (Tristan). The hypotype is from Mazatlan. There are many specimens from islands in the Gulf of California in the Chamberlin collection.

MICRATHENA FURCULA (O. P.-Cambridge), 1890

(Figures 60-66)

Aerosoma furcula O. P.-Cambridge, 1890

A. furcula Keyserling, 1892

M. furcula Simon, 1895

M. furcula F. P.-Cambridge, 1904

M. furcula Petrunkevitch, 1911

M. furcula Reimoser, 1917

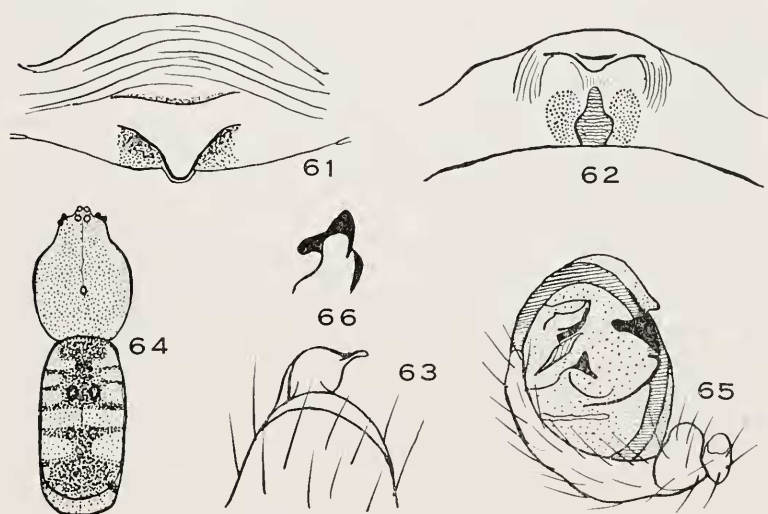
M. furcula Banks, 1929

M. furcula Roewer, 1942

M. furcula Bonnet, 1957

Only the female has been known up to the present time. Now however, with the finding of immature males with a copious supply of hair as well as other revealing features the male can be positively identified. Banks was the first to report the female from Panama.

Female hypotype. Total length 11.375 mm. Carapace quite typical of the genus except that it is largely covered by a copious growth of long yellowish silky hair. The abdomen is also well supplied with hair but this is of a darker color and largely confined to the lateral margins and especially to the posterior furcula. The color as noted among the specimens available for study is quite variable but follows rather closely the



External Anatomy of *Micrathena*

Figures 61-66, *M. furcula*

Figs. 61-63. Epigynum from below, in posterior view, and in profile from right side, respectively.

Fig. 64. Body of male in dorsal view.

Fig. 65. Palpal patella, tibia, and tarsus.

Fig. 66. Palpal tarsal basal hook.

description given by the author of the species. The form of the abdomen (Fig. 60) should make identification certain. The characteristics of the epigynum are shown in Figures 61-63.

Male allotype. Total length 4.94 mm. Carapace 2.145 mm. long, 1.820 mm. wide opposite interval between second and third coxae where it is widest; without any dorsal swellings; markedly narrowed opposite first coxae (Fig. 64).

Eyes. Eight in two rows as usual; ocular tubercles prominent, especially the laterals; viewed from above, both rows recurved; viewed from in front, anterior row gently recurved, posterior row procurved; central ocular quadrangle wider behind than in front in ratio of 9 : 8, about as long as wide behind. Ratio of eyes AME : ALE : PME : PLE = 5.5 : 4 : 6.5 : 3.5. AME separated from one another by slightly more than their diameter, from ALE by three diameters. PME separated from one another by a little less than their diameter, from PLE by nearly three diameters. Laterals separated from one another by nearly the radius of AME. Height of clypeus equal to about 2.5 times the diameter of AME; clypeus very receding.

Chelicerae. With low basal tubercle in front; unable to observe fang groove and teeth without serious injury to specimen.

Maxillae. Without noteworthy features.

Lip. Wider at base than long in ratio of 4 : 3; transversely and shallowly grooved; with sternal suture procurved.

Sternum. Elongate scutiform; widest between second coxae; longer than wide in ratio of about 3 : 2; considerably and irregularly corrugated; narrowly extended between fourth coxae which are only slightly separated.

Legs. 4123. Width of first patella at "knee" .17328 mm., tibial index of first leg 12. Width of fourth patella at "knee" .15162 mm., tibial index of fourth leg 11.

	Femora	Patellae	Tibiae	Metatarsi	Tarsi	Totals
(All measurements in millimeters)						
1.	1.592	.400	1.085	1.105	.575	4.757
2.	1.495	.390	.845	1.000	.520	4.250
3.	.975	.260	.520	.515	.390	2.660
4.	1.950	.400	.975	.975	.520	4.820
Palp	.400	.110	.110	—	.608	1.228

There is a moderately well developed ventral distal retrolateral hook on the first coxa and the corresponding short prolateral groove and ridge on the second femur. The first two legs are notably spiny, especially on the ventral and prolateral surfaces of the tibiae but the detailed placement seems not to be essential to the adequate description of the allotype. The ventral spines

on the two anterior tibiae are short and robust. Trichobothria are conspicuous on the tibiae.

Palp. Both patella and tibia are short with the latter relatively broad; the shape of the basal tarsal hook is shown in Figure 66; other tarsal features are shown in Figure 65.

Abdomen. With a moderately well developed dorsal scutum; 2.9 mm. long; 1.46 mm. wide in middle; only moderately flattened; other features fairly typical of males of the genus (Fig. 64).

Color in alcohol. Carapace a rich medium brown with fine black dots; legs generally yellowish brown but the first two pairs of femora are darker brown like the carapace. Sternum brown, mottled with black. Abdomen: dorsum with a color pattern essentially as represented in Figure 64. The darkly colored areas are a deep brown, nearly black; the lighter areas are yellowish beneath the scutum but white around the margin; laterally there is a series of seven white elongated spots; the venter is a complex of irregular blackish and brown spots and streaks. The color pattern in mature males is probably quite variable. As already pointed out, one important clue to proper identification of the male is the copious supply of hair in immature specimens.

Type locality. The holotype female came from Guatemala. The hypotype female is from Barro Colorado Island, C. Z., July, 1936. The allotype male is from Barro Colorado Island, C. Z., July, 1934. Two immature males are in my collection from the same locality, June, 1939. Several mature females have been taken on Barro Colorado Island, C. Z., on the following dates: July, 1924 (Banks). July-August, 1936.

MICRATHENA GLADIOLA (Walekenaer), 1841

(Figures 67-71)

Acrosoma aculeata C. L. Koch, 1836 (preoccupied)

Plectana gladiola Walekenaer, 1841

A. flaveolum Keyserling, 1892

M. gladiola F. P.-Cambridge, 1904

M. gladiola Petrunkevitch, 1911

M. gladiola Reimoser, 1917

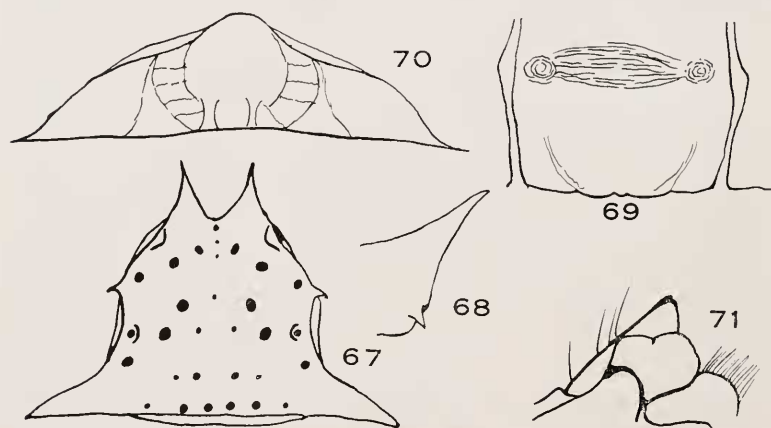
M. flaveola Petrunkevitch, 1925

M. gladiola Roewer, 1942

M. gladiola Bonnet, 1957

In collections made available to me I have found much confusion regarding the identification of this species. I have found

it assigned to other species and other species assigned to it. I am convinced that the group of species to which this belongs should be carefully studied, especially after more careful collecting is done within its area of distribution. In view of the uncertainties surrounding the species, I am relying quite largely upon the descriptions and identifications of both F. P.-Cambridge and Keyserling. The most significant features of the species, taken from a specimen collected at Bugaba, Panama, appear to be the following: The carapace is uniformly convex, not raised behind the median fovea; lateral eyes are on a low tubercle; fang groove with four teeth on promargin and three on retromargin; sternum very convex, raised into a distinct cone; epigynum with features as shown in Figures 69-71 taken from a specimen



External Anatomy of *Micrathena*

Figures 67-71, *M. gladiola*

Fig. 67. Abdomen of female in dorsal view.

Fig. 68. Abdominal spines at posterolateral angle from left side.

Figs. 69-71. Epigynum from below, in posterior view, and in profile from right side, respectively.

studied by F. P.-Cambridge in the British Museum (Natural History); femora finely granulose and with minute setigerous granules in front and beneath; abdominal spines as shown in Figures 67 and 68. The species is quite well known from a few places in Central America, northern South America, and some of the West Indies nearest to South America. The male is still unknown.

MICRATHENA GRACILIS (Walckenaer), 1805

(Figures 72-77)

- Epeira gracilis* Walckenaer, 1805
Plectana gracilis Walckenaer, 1841
Aerosoma matronale C. L. Koch, 1845
E. rugosa Hentz, 1850
A. rugosum Emerton, 1884
Micrathena gracilis Simon, 1895
M. matronalis Simon, 1895
M. gracilis F. P.-Cambridge, 1904
A. gracilis Banks, 1909
M. gracilis Petrunkevitch, 1911
M. gracilis Reimoser, 1917
M. gracilis Chickering, 1931
M. nigrrior Chamberlin and Ivie, 1936. New synonymy.
M. gracilis Roewer, 1942
M. gracilis Kraus, 1955
M. gracilis Bonnet, 1957

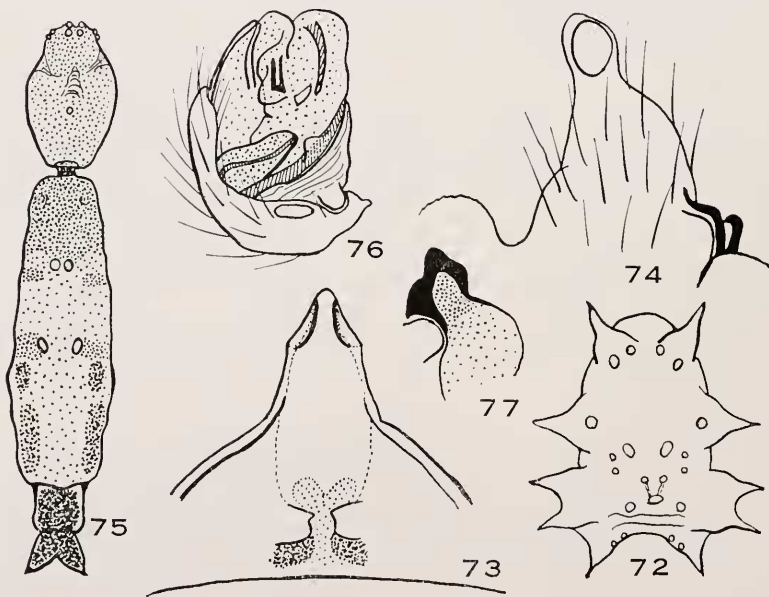
This species is widely distributed from the northern United States through Central America to Brazil. It has been figured and described many times but males remain scarce in collections and there is some evidence of confusion of these with males of other species. Only two males have been found thus far in the collections from Central America. The only record from Panama is that of *M. nigrrior* Chamberlin and Ivie, 1936. This is reported to have come from my collection of 1928 but it seems odd that it has not appeared in any of my numerous collections taken since that date.

Female hypotype. Total length 13 mm., including the prominent bases of the chelicerae. Cephalic part of the carapace quite prominent; both lateral ocular tubercles and median ocular tubercles moderately prominent; central ocular quadrangle only slightly wider behind than in front, longer than wide behind in ratio of 8 : 7. Sternum with a pointed tubercle at posterior end. Femora densely granulose with setigerous tubercles. Fang groove with four teeth along the promargin and three along the retromargin. Abdomen very tall; with five pairs of spines (Fig. 72) which should aid greatly in identification. Epigynum more distinctive than usual in the genus (Figs. 73-74).

Male hypotype. Total length 6.11 mm. Abdomen extremely long and slender; strongly chitinized; with a pair of segmental divisions at posterior end, the second of which bears a pair of

stout terminal spines (Fig. 75). The legs appear to lack the modified spines so frequently present in the males of the genus. The first coxa lacks the ventral hook and the second femur also lacks the ridge and groove so frequently present. The chief palpal features are shown in Figures 76-77.

Collection records. The female hypotype is from Patulul, Guatemala, January, 1912 (W. M. Wheeler). The male hypotype is from Orizaba, Mexico, with no date given. Other female specimens studied by me are from: Granada, Nicaragua (C. F. Baker); Polvon, Nicaragua; Tampico, Mexico, 1913 (H. L. Locke); Vera Cruz, Mexico; San Jose, Tamaulipica, Mexico, July, 1930 (Bartlett and Dice); Uricuajo, Costa Rica (Biolley and Tristan). One record only from Panama: *M. nigrrior* Chamberlin and Ivie.



External Anatomy of *Micrathena*

Figures 72-77, *M. gracilis*

Fig. 72. Abdomen of female, dorsal view.

Figs. 73-74. Epigynum in posterior and profile views, respectively.

Fig. 75. Dorsal view of body of male.

Fig. 76. Left palpal tarsus.

Fig. 77. Palpal tarsal basal hook, more enlarged.

MICRATHENA GRANULATA F. P.-Cambridge, 1904

(Figures 78-82)

M. granulata Petrunkevitch, 1911*M. granulata* Reimoser, 1917*M. granulata* Roewer, 1942*M. granulata* Bonnet, 1957

Male hypotype. Total length 4.16 mm. General form as shown in Figure 78. Legs with ordinary and unnoteworthy spination except for the first femora which, apparently, have a group of clasping spines near the distal end (Fig. 79). The first coxa

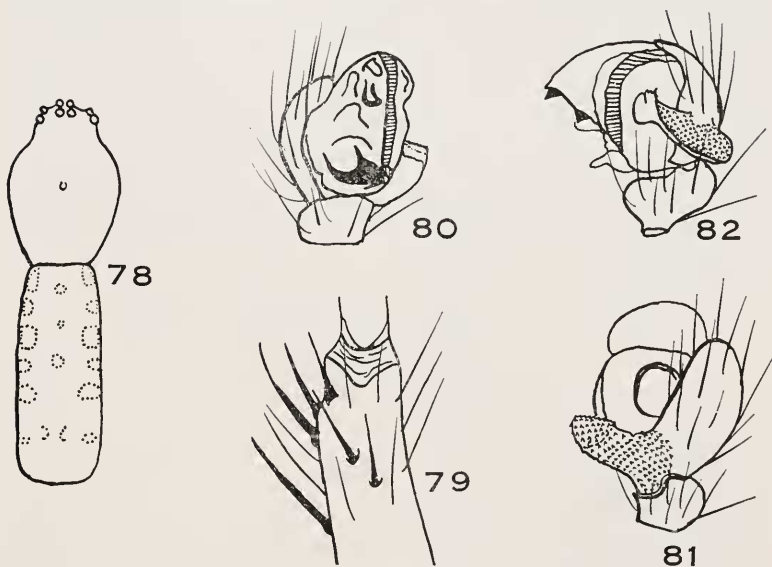
External Anatomy of *Micrathena*Figures 78-82, *M. granulata*

Fig. 78. Dorsal view of body of male.

Fig. 79. Distal end of left first femur; ventral view.

Figs. 80-82. Three different views of left palpal tibia and tarsus showing denticulated basal tarsal hook.

lacks a ventral hook and the second femur lacks the corresponding ridge and groove. Palp: the tarsal hook is very distinctive, being broadly extended, concave, apically recurved, and set with many minute denticles (Figs. 80-82). Color in alcohol: Legs,

cephalothorax, and mouth parts all light reddish brown with variations; abdomen dorsally yellowish with irregular whitish patches (Fig. 78).

For a time it was thought that *M. granulata* was the missing male of *M. catenulata*. Recently a male belonging to this species was found with females clearly belonging to *M. funebris* (Banks) collected on Coronados Island, Gulf of California. At present it would seem that *M. granulata* F. P.-Cambridge could be the missing male for either *M. catenulata* F. P.-Cambridge or *M. funebris* (Banks). On the other hand, perhaps this species belongs with some other of the numerous species known only from females. This condition again emphasizes the need for careful collecting and close observation over the whole area occupied by this genus.

Collection records. F. P.-Cambridge had the species only from Teapa, Mexico. The male hypotype is from Chiapas, Esequintla, Mexico with no date of collection given. I have a second specimen taken with the hypotype and another from Coronados Island, Gulf of California, May 18, 1921. These three are all in the collection of the Museum of Comparative Zoology at Harvard College.

MICRATHENA HORRIDA (Taczanowski), 1873

(Figures 83-88)

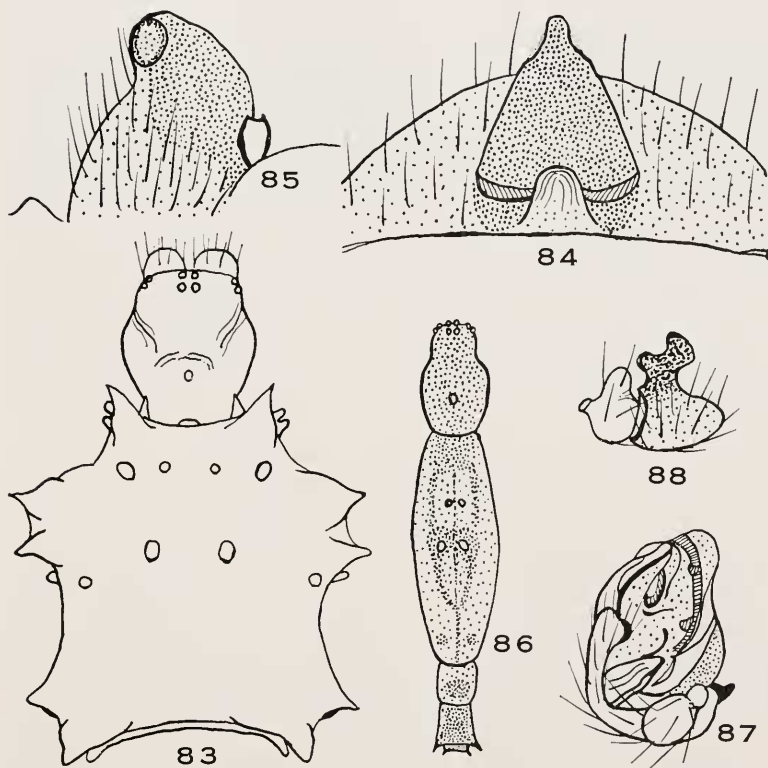
- Acrosoma horrida* Taczanowski, 1873
- A. mammillata* Butler, 1873
- A. longicauda* Keyserling, 1892. New synonymy.
- M. mammillata* F. P.-Cambridge, 1904
- A. longicauda* O. P.-Cambridge, 1890. New synonymy.
- M. longicauda* F. P.-Cambridge, 1904. New synonymy.
- A. mammillata* Banks, 1909
- M. horrida* Petrunkevitch, 1910
- M. horrida* Petrunkevitch, 1911
- M. mammillata* Petrunkevitch, 1911
- M. longicauda* Petrunkevitch, 1911. New synonymy.
- M. horrida* Reimoser, 1917
- M. longicauda* Reimoser, 1917. New synonymy.
- M. horrida* Petrunkevitch, 1925
- M. longicauda* Petrunkevitch, 1925. New synonymy.
- M. longicauda* Banks, 1929. New synonymy.
- A. mammillata* Banks, 1929
- M. mammillata* Bryant, 1940
- M. horrida* Roewer, 1942

M. longicauda Roewer, 1942. New synonymy.

M. horrida Bonnet, 1957

M. longicauda Bonnet, 1957. New synonymy.

Until recently it has seemed unsafe to American araneologists to synonymize *M. mammillata* (Butler) with *M. horrida* (Taczanowski). It now seems to me that the synonymy as indicated is



External Anatomy of *Micrathena*

Figures 83-88, *M. horrida*

Fig. 83. Dorsal view of body of female.

Figs. 84-85. Epigynum in posterior view, and in profile, right side, respectively.

Fig. 86. Dorsal view of body of male.

Fig. 87. Left palpal tibia and tarsus of male.

Fig. 88. Male palpal tibia and basal tarsal hook to show form of latter.

fully justified. F. P.-Cambridge suggested that *M. longicauda* (O. P.-Cambridge) might be the male of *M. mammillata* (Butler). Banks (1929) was quite convinced that this was so but he continued to list them separately. Miss Bryant (1940) recognized the male of *M. mammillata* but did not synonymize it with *M. longicauda*. The species appears to be closely related to *M. gracilis* (Walck.); this conclusion is based upon a comparison of both sexes of both species.

Female hypotype. Total length 8.9 mm., including the prominent bases of the chelicerae. Very strongly chitinized. Carapace with raised cephalic part; only slightly raised behind median fovea. Sternum convex but without a posterior tubercle as seen in *M. gracilis*. The femora are excessively provided with setigerous tubercles. Abdomen: with seven pairs of marginal spines the first of which extends from the anterior margin over the posterior lateral corners of the carapace (Fig. 83); there are also numerous lateral tubercles beneath the marginal spines (five on each side in the hypotype) subject to considerable variation among the many specimens available; the epigynum is strongly tubercular (Figs. 84-85); there is also a prominent, median, chitinized tubercle just posterior to the cone surrounding the spinnerets.

Male hypotype. Total length 4.85 mm. Very long and slender; strongly chitinized (Fig. 86). Abdomen with a trilobate posterior termination; the trilobate termination bears four small but definite spines. Legs without especially modified spines; femora one and two with numerous small setigerous tubercles; patellae one and two quite dilate on retromargin; coxa one without any ventral hook and femur two without the corresponding ridge and groove. Features of the palp with tarsal hook shown in Figures 87-88. The shape of the abdomen and the palpal features furnish the best means of identification of the male of the species.

Collection records. Male and female hypotypes are from Barro Colorado Island, C. Z., July and August, 1950, respectively. The species is widely distributed from the southern United States through Central America to several countries in northern South America and the West Indies. It occurs in my collections from many localities in Panama and is abundant on Barro Colorado Island.

MICRATHENA INAEQUALIS F. P.-Cambridge, 1904

(Figures 89-93)

Acrosoma inaequalis Banks, 1909*M. inaequalis* Petrunkevitch, 1911*M. inaequalis* Reimoser, 1917*M. inaequalis* Chickering, 1936*M. inaequalis* Roewer, 1942*M. inaequalis* Bonnet, 1957

F. P.-Cambridge (1904) had this species from Costa Rica and Guatemala. Banks (1909) had it from Costa Rica. I reported it from Panama in 1936 but at that time the specimens in my possession were all immature and may have been wrongly identified. Now I can definitely record the species from the highlands of western Panama.

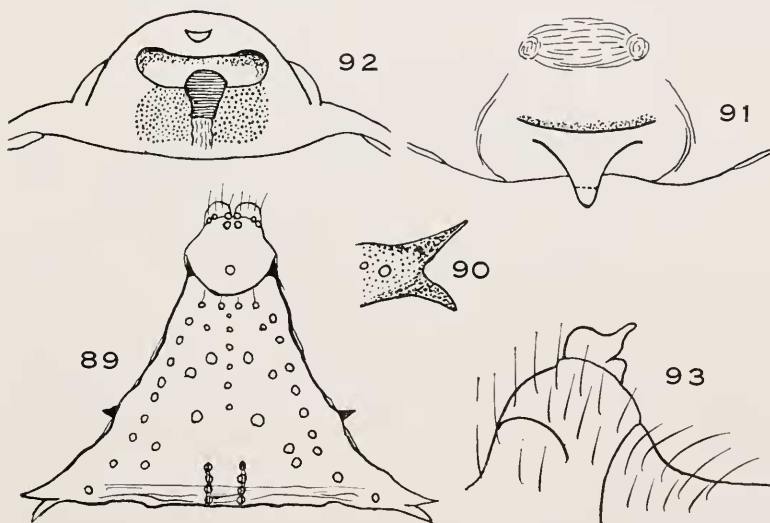
External Anatomy of *Micrathena*Figures 89-93, *M. inaequalis*

Fig. 89. Dorsal view of body of female.

Fig. 90. Posterolateral abdominal spines; posterior view.

Figs. 91-93. Epigynum from below, in posterior view, and in profile from right side, respectively.

Hypotype female. Total length 7.8 mm. Carapace raised both before and behind the median fovea. Sternum moderately convex; with a series of low marginal tubercles. Abdomen: there

is a pair of sharply pointed spines reaching far over the carapace; there is also a pair of short marginal spines somewhat behind the middle; the abdomen extends far laterally at the posterior border and there terminates in a pair of spines on each side (Figs. 89-90). These eight spines seem to be typical of the species but small lateral marginal spines may also occur on some specimens. The degree to which the large posterior lateral spines are separated is also, apparently, at least somewhat variable in the general population. Characteristics of the epigynum are shown in Figures 91-93.

Collection records. In addition to the earlier records of the species from Costa Rica and Guatemala I can now add the following from Panama: El Valle, July, 1936; Boquete, Chiriqui, July, 1939; El Volcan, Chiriqui, August, 1950. The hypotype female is from Boquete, July, 1939. The male is unknown.

MICRATHENA INSOLITA sp. nov.

(Figures 94-98)

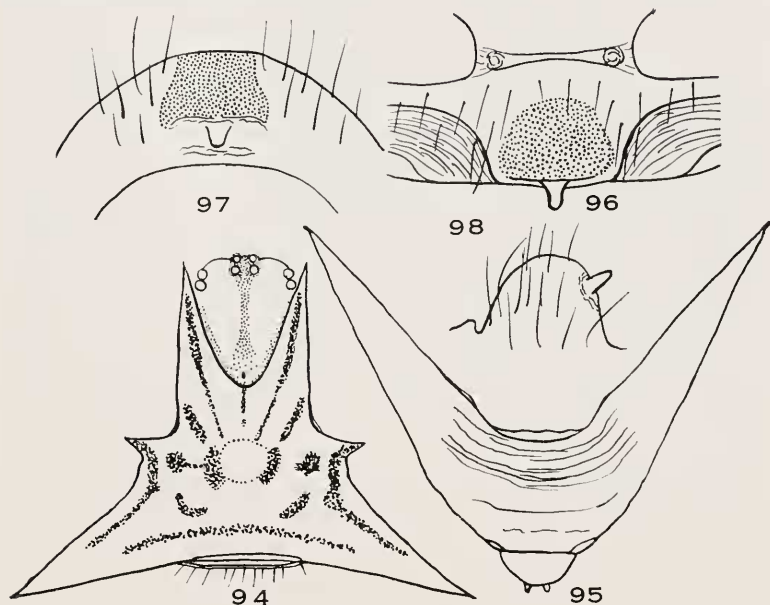
Apparently the holotype had recently completed its last moult and was not yet well chitinized. It is, however, in good condition for describing.

Female holotype. Total length 4.55 mm. Carapace largely covered by the anterior marginal abdominal spines and projecting anterior end of the abdomen itself; about 2.08 mm. long and about 1.625 mm. wide opposite interval between second and third coxae where it is widest; median thoracic fovea obscure; regularly and gently arched dorsally from PME to posterior declivity with no marked gibbosity as in many species in the genus.

Eyes. Eight in two rows as usual; viewed from above, both rows recurved; viewed from in front, both rows proenrved, posterior row strongly so; central ocular quadrangle wider behind than in front in ratio of about 3 : 2, wider behind than long in ratio of about 18 : 13. Ratio of eyes AME : ALE : PME : PLE = 7 : 7 : 8 : 7 (laterals somewhat oval). AME separated from one another by a little more than 1.5 times their diameter, from ALE by nearly six times their diameter. PME separated from one another by slightly more than 2.5 times their diameter, from PLE by about 5 times their diameter. Laterals separated from one another by about the radius of ALE. Height of clypeus equal to 1.5 times the diameter of AME.

Chelicerae. Parallel, moderately robust; as usual in the genus. Unable to see fang groove because of fragility of the holotype.

Maxillae and Lip. Apparently as usual in the genus and without noteworthy features.



External Anatomy of *Micrathena*

Figures 94-98, *M. insolita*

Fig. 94. Dorsal view of body of female.

Fig. 95. Posterior end of abdomen; seen from posterior surface.

Figs. 96-98. Epigynum from below, from a somewhat posterior view, and in profile from right side, respectively.

Sternum. Quite convex; without tubercles; posterior coxae separated by about half their width.

Legs. 4123. Width of first patella at "knee" .2274 mm., tibial index of first leg 12. Width of fourth patella at "knee" .2373 mm., tibial index of fourth leg 13.

	Femora	Patellae	Tibiae	Metatarsi	Tarsi	Totals
(All measurements in millimeters)						

1.	1.690	.715	1.170	1.040	.617	5.232
2.	1.660	.715	1.040	.975	.520	4.910
3.	1.170	.650	.530	.747	.520	3.617
4.	2.145	.650	1.170	1.202	.617	5.784

Legs with few spines; details of spination seem to be unnoteworthy.

Abdomen. Measured with anterior and posterior spines, as long as entire body. Three pairs of spines as indicated in Figures 94-95. Perhaps the most striking feature is the extreme extension of the anterior pair of spines.

Epigynum. Features of this organ essentially as shown in Figures 96-98. This organ lies so close to the chitinized cone surrounding the spinnerets that it is impossible to view it from the posterior surface in the usual manner.

Color in alcohol. Legs generally yellowish; first two pairs with a dorsal brown stripe on femora, patellae, tibiae, and metatarsi with the tarsi entirely brown; second two pairs of legs similarly colored except the brown stripe is changed to a large spot of irregular shape. Carapace yellowish in anterior half with brown dots and a narrow brown median stripe; posterior half with brown dots closely crowded together. Abdomen: dusky yellowish dorsally with black stripes and spots as suggested in Figure 94; posterior and lateral surfaces yellowish with irregular black stripes.

Type locality. Female holotype from Porto Bello, Panama, August, 1936. There are no paratypes and the male is unknown.

MICRATHENA MACFARLANEI sp. nov.

(Figures 99-102)

Female holotype. Total length from AME to middle of posterior margin of abdomen 11.05 mm. Carapace about 4 mm. long (considerably overlapped by abdomen), 3.185 mm. wide opposite posterior border of second coxae where it is widest; quite strongly gibbous just posterior to well defined median fovea; with paired dorsolateral foveae very faintly indicated; gently raised just posterior to PME.

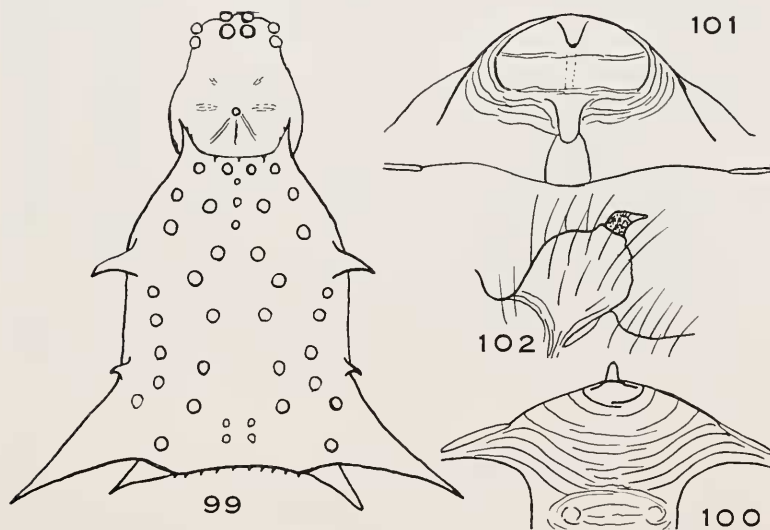
Eyes. Eight in two rows as usual; viewed from above, both rows moderately recurved; viewed from in front, anterior row slightly recurved, posterior row slightly procurved, all measured by centers. Central ocular quadrangle wider behind than in front in ratio of about 19 : 17; wider behind than long in ratio of about 19 : 16. Ratio of eyes AME : ALE : PME : PLE = 6.5 : 4.5 : 7 : 4.5. AME separated from one another by ten-thirteenths of their diameter, from ALE by about 4 times their diameter. PME separated from one another by slightly more than their diameter, from PLE by four times their diameter.

Laterals separated from one another by slightly less than one-fourth of the diameter of one of them. Height of clypeus equal to slightly more than the diameter of AME.

Chelicerae. Robust; gibbous in front near base. Promargin of fang groove with four teeth, retromargin with three robust teeth.

Maxillae and *Lip*. Typical of females of the genus; details regarded as unnoteworthy.

Sternum. Sternal suture procurved; anterolateral tubercles moderately well developed, others hardly tubercular, more rounded ridges; continuous posteriorly with a sclerite extending between fourth coxae which are separated by two-fifths of their width.



External Anatomy of *Micrathena*

Figures 99-102, *M. macfarlanei*

Fig. 99. Dorsal view of body of female.

Figs. 100-102. Epigynum from below, in posterior view, and in profile from right side, respectively.

Legs. 4123. Width of first patella at "knee" .520 mm., tibial index of first leg 10. Width of fourth patella at "knee" .520 mm., tibial index of fourth leg 12.

	Femora	Patellae	Tibiae	Metatarsi	Tarsi	Totals
	(All measurements in millimeters)					
1.	5.005	1.365	3.575	3.575	1.105	14.625
2.	4.615	1.300	3.055	3.120	.975	13.065
3.	2.730	.925	1.625	1.480	.845	7.605
4.	6.500	1.240	3.315	4.355	1.235	16.645

Setigerous tubercles numerous on legs; true spines few; first femora with a series of six or seven very short prolateral spines.

Abdomen. Plump and full; somewhat convex dorsally; general form and five pairs of spines as shown in Figure 99.

Epigynum. Essentially as shown in Figures 100-102.

Color in alcohol. Legs with varying shades of reddish brown. Carapace with a narrow, median, dusky brown stripe from between PME to near median fovea; with a broad, broken, dusky brown, dorsolateral stripe on each side leaving the margins yellowish. Sternum dark brown. Lip dark brown, nearly black, with a yellowish tip. Maxillae dark brown with anterior and median margins yellowish. Chelicerae: fang and tips of basal segments dark brown, elsewhere yellowish. Abdomen: dorsal region almost white with black "punctures"; second, fourth, and fifth spines reddish at bases with more or less black striping; lateral sides and venter a variegated black and yellowish.

Type locality. Female holotype from Barro Colorado Island, C. Z., August, 1954; one mature paratype female and several immature females from the same locality, July, 1936 and June, 1939.

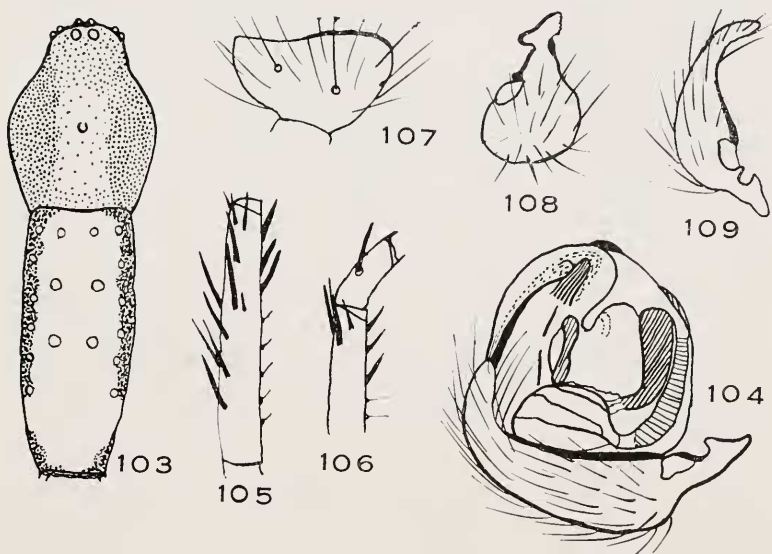
MICRATHENA MACILENTA sp. nov.

(Figures 103-109)

Note: The two specimens treated under the name *M. macilenta* sp. nov. were formerly believed to belong to the species named *M. parallela* (O. P.-Cambridge) but a careful comparison with the type of the latter species in the British Museum (Natural History) has shown this to be an error and so they must be regarded as representing a species new to science. One is selected, therefore, as the holotype and described in accord with my usual procedure.

Male holotype. Total length 3.95 mm. Carapace 1.76 mm. long; somewhat overlapped by abdomen; 1.30 mm. wide slightly behind second coxae where it is widest; .66 mm. tall just behind well developed median fovea where it is tallest.

Eyes. Eight in two rows as usual; ocular tubercles only moderately developed; viewed from above, both rows strongly recurved; viewed from in front, anterior row slightly procurved, posterior row strongly procurved, all measured by centers. Central ocular quadrangle wider behind than in front in ratio of 11 : 9, wider behind than long in ratio of 22 : 19. Ratio of eyes AME : ALE : PME : PLE = 7 : 6 : 8 : 5.5. AME separated from one another by slightly less than their diameter,



External Anatomy of *Micrathena*

Figures 103-109, *M. macilenta*

Fig. 103. Dorsal view of body of male.

Fig. 104. Left palpal tarsus.

Fig. 105. Left first femur; prolateral view.

Fig. 106. Distal end of left second femur and patella; prolateral view.

Fig. 107. Dorsal view of left palpal tibia.

Figs. 108-109. Two views of left palpal cymbium and basal tarsal hook.

from ALE by nearly two and one-third times their diameter. PME separated from one another by their diameter, from PLE by two and one-half times their diameter. Laterals separated from one another only by a well defined line. Height of clypeus equal to about one and one-fifth times the diameter of AME.

Chelicerae, *Maxillae*, and *Lip*. All apparently quite typical of males of the genus. Teeth along fang groove not observed because of fragility of the holotype.

Sternum. Only slightly convex; slightly rugulose; without definite tubercles; continued as a narrow sclerite between coxae laterally and as a fairly broad, thin sclerite between fourth coxae which are separated by about one-third of their width.

Legs. 1423. Width of first patella at "knee" .17328 mm., tibial index of first leg 11. Width of fourth patella at "knee" .15162 mm., tibial index of fourth leg 13.

	Femora	Patellae	Tibiae	Metatarsi	Tarsi	Totals
(All measurements in millimeters)						
1.	1.520	.528	1.056	1.000	.484	4.588
2.	1.300	.440	.814	.770	.440	3.764
3.	.704	.290	.396	.418	.352	2.160
4.	1.540	.352	.814	.980	.418	4.104
Palp	.308	.141	.141	—	.572	1.162

The ventral, distal, retrolateral hook on first coxa and the corresponding ridge and groove on the proximal prolateral surface of the second femur are moderately well developed. There are numerous spines on legs; those with most significance appear to be on the first and second femora essentially as shown in Figures 105-106.

Palp. General features as shown in Figures 104, 107-109. Resembles that of *M. parallela* (O. P.-Cambridge) with which the species was formerly confused.

Abdomen. Much flattened dorsoventrally; the only evidence of suppressed spines shows at posterior end where two pairs of small tubercles occur; other features as usual in males of the genus (Fig. 103).

Color in alcohol. Legs and mouth parts variable shades of yellowish; not distinctive. Carapace yellowish in the center, brownish elsewhere. Abdomen: dorsum nearly white throughout center with irregular black marginal stripes as shown in Figure 103; venter dusty yellowish with gray patches in regions of booklungs. Paratype follows the color pattern of the holotype very closely.

Type locality. Male holotype from Barro Colorado Island, C. Z., July, 1934; one paratype male from the same locality, August, 1950, and one taken in December, 1957. The female is unknown.

MICRATHIENA MILITARIS (Fabricius), 1775

- Aranea militaris* Fabricius, 1775
A. militaris Olivier, 1789
Plectana militaris Walckenaer, 1841
Acrosoma militaris Butler, 1873
A. militare Banks, 1898
M. militaris Petrunkevitch, 1911
M. militaris Reimoser, 1917
M. militaris Petrunkevitch, 1930
M. militaris Roewer, 1942
M. militaris Bonnet, 1957

Banks (1898), with some uncertainty, reported this species from Margarita Island, Lower California. The single specimen now in the Museum of Comparative Zoology from Margarita Island and labelled *M. militaris* (Fabr.) is a specimen of *M. sexspinosa* (Hahn). Another specimen from Western Mexico with a similar label is a female of *M. sagittata* (Walc.). I am assuming, therefore, that *M. militaris* (Fabr.) has not yet been found in Central America.

MICRATHIENA MITRATA (Hentz), 1850

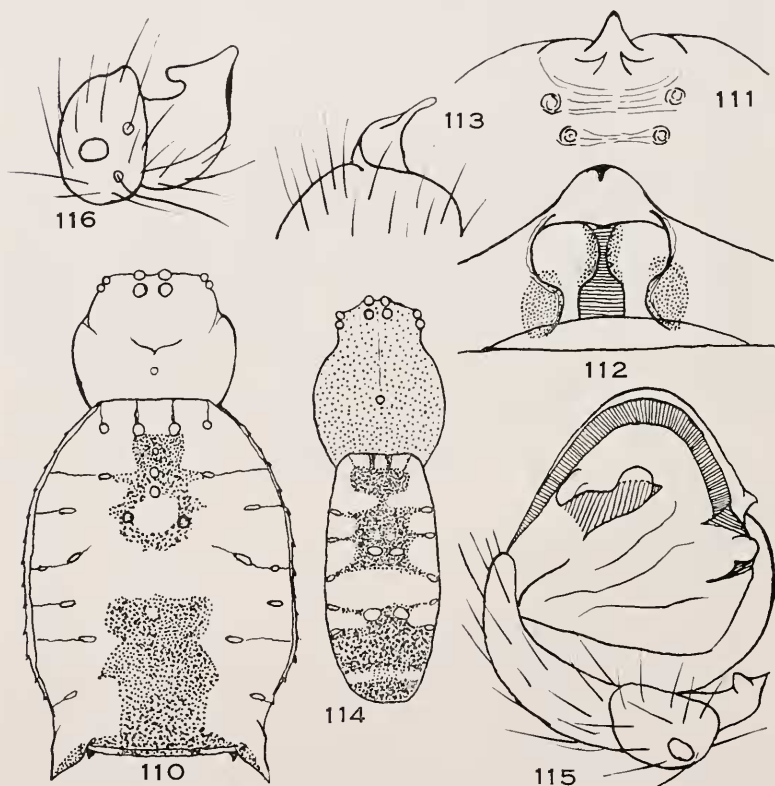
(Figures 110-116)

- Acrosoma mitrata* Hentz, 1850
A. mitrata Emerton, 1884
A. redivianum McCook, 1893
A. mitrata Banks, 1898
A. mitrata Emerton, 1902
M. mitrata F. P.-Cambridge, 1904
M. rediviana Petrunkevitch, 1911
M. mitrata Reimoser, 1917
M. mitrata Roewer, 1942
M. mitrata Kaston, 1948
M. mitrata Levi, 1954
M. mitrata Bonnet, 1957

The female of this species is well known from many localities in the United States. It has also been reported from Mexico and, doubtfully, from Cuba (Franginillo). The male, apparently, has not been carefully studied and appears to be scarce in collections. In general, the specimens from the United States studied by me agree well with those from Mexico in the British Museum (Natural History). The hypotypes have been selected from collections made in Canton, North Carolina, and kept in the Museum

of Comparative Zoology. There is no date of collection given but the specimens have been in preservation a long time.

Female hypotype. Total length 4.55 mm. Probably the best means of identification is the presence of two pairs of postero-lateral abdominal spines (Fig. 110). Prominent spines are lacking elsewhere but there are many small lateral spinules usually



External Anatomy of *Micrathena*

Figures 110-116, *M. mitrata*

Fig. 110. Dorsal view of body of female.

Figs. 111-113. Epigynum from below, in posterior view, and in profile from right side, respectively.

Fig. 114. Dorsal view of body of male.

Fig. 115. Left palpal tarsus of male.

Fig. 116. Palpal tibia and basal tarsal hook of male, more enlarged.

not mentioned in descriptions. The lateral spinules appear to be less evident in the specimens from Mexico than among those from the United States which I have had an opportunity to study. In some of the specimens in the British Museum (Natural History) from Mexico there appeared to be a tendency for the anterolateral corners of the abdomen to be somewhat extended. The epigynum is obscurely distinctive (Figs. 111-113).

Male hypotype. Total length 3.25 mm. Abdominal spines are completely suppressed in the male (Fig. 114). Features of the palp are difficult to determine and present in drawings because of long preservation, minute size, and some deterioration, but Figures 115-116 are believed to give the most important characteristics. The coxal hook and corresponding femoral groove and ridge are poorly developed.

MICRATHIENA MIRIFICA sp. nov.

(Figures 117-121)

Male holotype. Total length 4.03 mm. Carapace 1.69 mm. long; 1.495 mm. wide opposite interval between second and third coxae where it is widest; considerably overlapped by anterior end of abdomen; median fovea only slightly behind middle; median region nearly level from PME to posterior declivity; with lateral margins regularly rounded to cephalic region (Fig. 117).

Eyes. Eight in two rows as usual; viewed from above, both rows recurved; viewed from in front, anterior row nearly straight, posterior row procurved, all measured by centers. Central ocular quadrangle only slightly wider behind than in front, slightly longer than wide behind. Ratio of eyes AME : ALE : PME : PLE = 7 : 5 : 7 : 5 (laterals somewhat angular). AME separated from one another by slightly less than their diameter, from ALE by about 2.5 times their diameter. PME separated from one another by slightly less than their diameter, from PLE by about three times their diameter. Laterals separated from one another by about one-third of their diameter. Height of clypeus equal to about 1.5 times the diameter of AME. Clypeus quite receding. Median ocular tubercle quite prominent; lateral ocular tubercles moderately prominent.

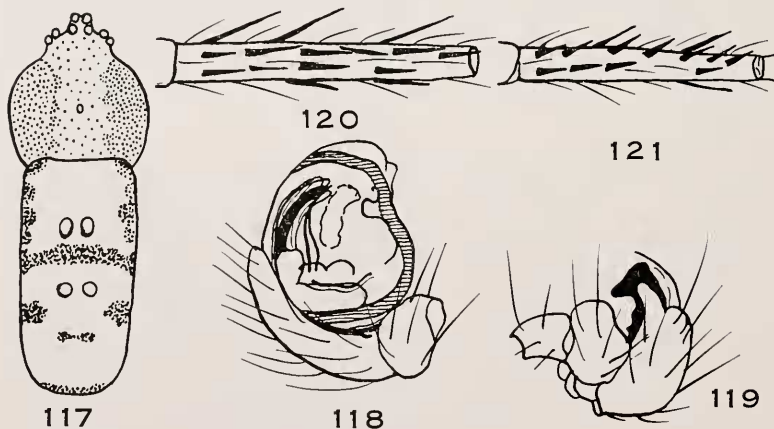
Chelicerae, Maxillae, and Lip. Quite as usual in males of the genus and without noteworthy features.

Sternum. Nearly flat; without noteworthy features. Pedicel with pointed tubercle projecting forward toward posterior end of sternum. Posterior coxae separated by a little more than half their width.

Legs. 1423. Width of first patella at "knee" .166 mm., tibial index of first leg 10. Width of fourth patella at "knee" .154 mm., tibial index of fourth leg 14.

	Femora	Patellae	Tibiae	Metatarsi	Tarsi	Totals
	(All measurements in millimeters)					
1.	1.852	.540	1.040	1.040	.525	4.997
2.	1.430	.410	.715	.780	.500	3.835
3.	.760	.300	.455	.400	.325	2.240
4.	1.625	.390	.745	.845	.455	4.060
Palp	.325	.152	.162	—	.638	1.277

Spines: first femur without special clasping spines; first tibia with long, robust, prolateral, and ventral spines as shown in Figure 120; second tibia with short, robust, prolateral, and ventral spines as shown in Figure 121. Without coxal hook and femoral ridge and groove.



External Anatomy of *Micrathena*

Figures 117-121, *M. mirifica*

Fig. 117. Dorsal view of body of male.

Fig. 118. Left palpal tibia and tarsus.

Fig. 119. Left palpal patella, tibia, and basal tarsal hook.

Figs. 120-121. Left first and second tibiae, respectively; ventral view.

Palp. The tibia is simple, without spines or special modifications. Other palpal features, including tarsal hook, shown in Figures 118-119.

Abdomen. Wholly without spines; considerably flattened dorsoventrally; with form as shown in Figure 117.

Color in alcohol. Legs yellowish brown above with small dusky patches; lighter below. Carapace light brown in center with broad, darker brown lateral stripes. Abdomen nearly white dorsally with black markings as suggested in Figure 117. Sternum yellowish with a large black spot in posterior half. Color pattern of paratypes like that of holotype.

Type locality. Male holotype and one paratype from Barro Colorado Island, C. Z., July, 1950; one additional paratype from the same locality, July, 1939.

MICRATHENA MODICA sp. nov.

(Figures 122-126)

Male holotype. Total length 4.29 mm. Carapace 1.625 mm. long; 1.43 mm. wide just behind second coxae where it is widest; thoracic part regularly rounded laterally; .585 mm. tall just behind the moderately well marked central fovea where it is tallest; considerably overlapped by anterior border of abdomen.

Eyes. Eight in two rows as usual; lateral ocular tubercles moderately well developed; central ocular tubercle hardly existent. Viewed from above, both rows rather strongly recurved; viewed from in front, anterior row gently recurved, posterior row clearly procurved, all measured by centers. Central ocular quadrangle only slightly wider behind than in front, almost exactly as long as wide behind. Ratio of eyes AME : ALE : PME : PLE = 8 : 6 : 8.5 : 6. AME separated from one another by nearly their diameter, from ALE by about three-halves of their diameter. PME separated from one another by about their diameter, from PLE by about twice their diameter. Laterals separated from one another by a broad line. Height of clypeus equal to about nine-eighths of the diameter of AME.

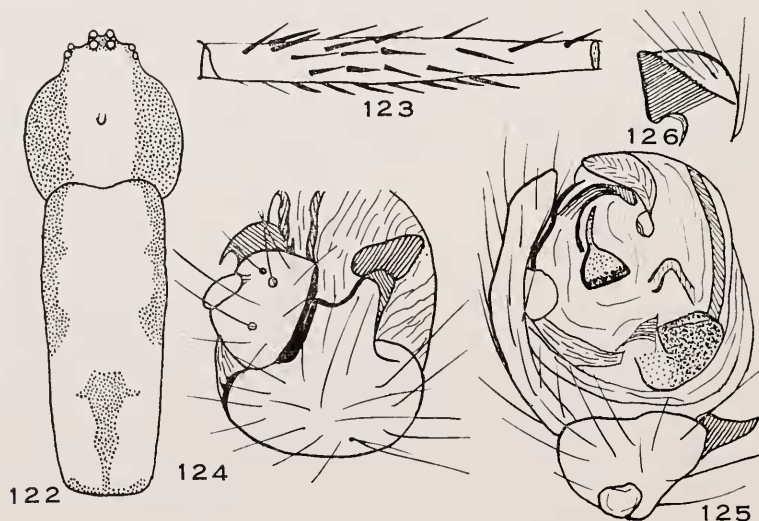
Chelicerae, Maxillae, and Lip. Apparently quite typical of males in the genus. Teeth along the fang groove not observed because of fragility of the holotype.

Sternum. Only slightly convex; tubercles almost completely suppressed; posterior end extended between fourth coxae which are separated by about two-thirds of their width.

Legs. 1243. Width of the first patella at "knee" .19494 mm., tibial index of first leg 9. Width of fourth patella at "knee" .15162 mm., tibial index of fourth leg 9.

	Femora	Patellae	Tibiae	Metatarsi	Tarsi	Totals
(All measurements in millimeters)						
1.	2.470	.600	1.690	1.625	.650	7.035
2.	2.085	.575	1.320	1.365	.520	5.865
3.	1.170	.357	.585	.720	.390	3.222
4.	1.975	.455	1.170	1.276	.540	5.416
Palp	.286	.132	.154	—	.528	1.100

The ventral distal retrolateral hook on first coxa and the corresponding proximal prolateral groove and ridge on the second femur are all lacking in this species. The legs are all quite spiny but the modified spines appear to be most important on the first femur (Fig. 123). Probably a considerable degree of variation in the spination will be noted when a series of these males is available for study.



External Anatomy of *Micrathena*

Figures 122-126, *M. modica*

Fig. 122. Dorsal view of body of male.

Fig. 123. Left first femur; ventral view.

Fig. 124. Left palpal tibia and base of tarsus with tarsal hook.

Fig. 125. Left palpal tibia and tarsus.

Fig. 126. Another view of basal tarsal hook.

Palp. General features shown in Figures 124-126. The basal tarsal hook resembles those of certain other species but is also somewhat distinctive. The tibia is conservative and without special features.

Abdomen. General features as shown in Figure 122. Much flattened dorsoventrally; with no indication of suppressed spines.

Color in alcohol. Legs and mouth parts in varying shades of brownish and yellowish colors; details regarded as unessential. Carapace with a yellowish brown central stripe and a broad dusky brown stripe on each side as indicated by stippling in Figure 122. Abdomen: with many white subchitinous flecks on dorsum together with dark markings also as indicated in Figure 122.

Type locality. Male holotype is from Summit, Canal Zone, July, 1950. One paratype male from Barro Colorado Island, C. Z., July, 1950; one immature male from El Volcan, Chiriqui, August, 1950 showing short spines at posterior end of abdomen. The female is unknown.

MICRATHENA MOLESTA sp. nov.

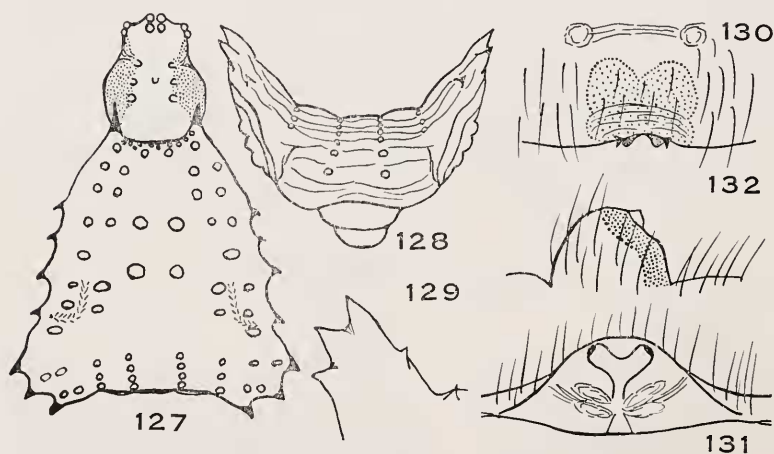
(Figures 127-132)

Note: The holotype specimen described below was found in the Nathan Banks collection in the Museum of Comparative Zoology. It was filed with two other specimens and labelled *M. triserrata* F. P.-Cambridge. I have carefully compared the holotype with those specimens assigned to *M. triserrata* F. P.-Cambridge in the British Museum (Natural History) and have been compelled to decide that they do not belong together. For this reason, but somewhat hesitantly, I have been compelled to consider the species new to science and, therefore, I am describing the holotype in accord with my usual procedure.

Female holotype. Total length 6.825 mm. Carapace about 2.21 mm. long; 1.82 mm. wide opposite the interval between second and third coxae where it is widest; 1.40 mm. tall at level of marked gibbosity just behind the central fovea which is well defined; with three pairs of dorsolateral foveae also well defined (Fig. 127).

Eyes. Eight in two rows as usual; viewed from above, posterior row moderately recurved, anterior row strongly so. Viewed from in front, anterior row gently recurved, posterior row gently procurved, all measured by centers. Central ocular quadrangle

wider behind than in front in ratio of about 6 : 5, wider behind than long in ratio of 15 : 14. Ratio of eyes AME : ALE : PME : PLE = 9.5 : 7.5 : 11 : 6. AME separated from one another by a little less than their diameter, from ALE by a little less than 2.5 times their diameter. PME separated from one another by a little more than their diameter, from PLE by about five-thirds of their diameter. Laterals separated from one another by about one-fourth the diameter of PLE (a deformity has removed the PLE far away from the ALE on the right side). Height of clypeus equal to about the radius of AME.



External Anatomy of *Microathena*

Figures 127-132, *M. molesta*

Fig. 127. Dorsal view of body of female.

Fig. 128. Posterior end of abdomen from behind.

Fig. 129. Right lateral view of posterolateral corner of abdomen.

Figs. 130-132. Epigynum from below, in posterior view, and in profile from right side, respectively.

Chelicerae, *Maxillae*, and *Lip*. All apparently quite typical of the genus and with details regarded as unnoteworthy.

Sternum. A simple scutiform; sternal suture nearly straight; anterolateral tubercles moderately developed, others hardly indicated; not continued between fourth coxae which are separated by about one-third of their width.

Legs. 4123. Width of first patella at "knee" .22743 mm., tibial index of first leg 11. Width of fourth patella at "knee" .23826 mm., tibial index of fourth leg 13.

	Femora	Patellae	Tibiae	Metatarsi	Tarsi	Totals
	(All measurements in millimeters)					
1.	2.080	.725	1.430	1.105	.630	5.970
2.	1.950	.655	1.190	1.040	.585	5.420
3.	1.300	.425	.780	.650	.390	3.545
4.	2.470	.640	1.430	1.495	.630	6.665

With few spines on legs; exact number and placement not regarded as essential for adequate description; with many setigerous tubercles.

Abdomen. General form as shown in Figures 127-129. The holotype has eight pairs of spines as shown; one of the paratypes has the same number but the other has the three small lateral spines on each side represented only by tubercles.

Epigynum. Essentially as shown in Figures 130-132. One paratype agrees well with the holotype in this respect but the other does not, perhaps because of immaturity.

Color in alcohol. Carapace a reddish brown with lateral sides dusky as indicated by stippling in Figure 127. Sternum a lighter reddish brown. Legs and mouth parts with varying shades of reddish brown. Abdomen: dorsum almost entirely yellowish with small white subchitinous flecks; the numerous "punctures" are reddish brown.

Type locality. Holotype female together with two paratype females from Tablazo, Costa Rica. Apparently collected by Prof. Tristan during the early part of the present century and reported as *M. triserrata* F. P.-Cambridge (Banks, 1909). The male is unknown.

MICRATHENA PARALLELA (O. P.-Cambridge), 1890

(Figures 133-137)

Acrosoma parallelum O. P.-Cambridge, 1890

A. parallelum Keyserling, 1892

M. parallela F. P.-Cambridge, 1904

M. parallela Petrunkevitch, 1911

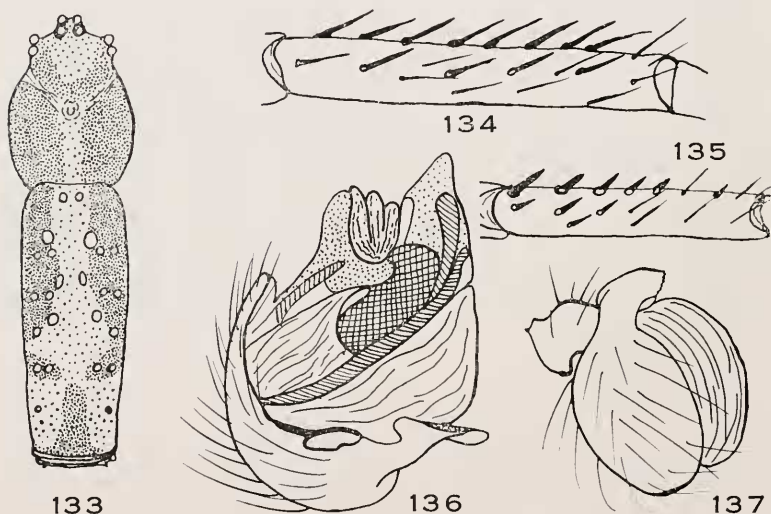
M. parallela Reimoser, 1917

M. parallela Petrunkevitch, 1925

M. parallela Roewer, 1942

M. parallela Bonnet, 1957

The Pickard-Cambridges (1890, 1904) reported this species from Panama and Guatemala. Keyserling (1892) mentions having numerous specimens from Guatemala. The species has not yet appeared in my collections and my only opportunity to study it came during my period of work in the British Museum (Natural History) in the summer of 1958. The type material now consists of parts of four specimens from which the following facts have been taken. Apparently there are no highly modified femoral spines in this species such as frequently occur in males of the genus; some variation in respect to tibial spines has been noted among the available specimens but the ventral spines on the first and second tibiae are probably fairly typical (Figs. 134-135); there is some discoloration from long preservation but in



External Anatomy of *Micrathena*

Figures 133-137, *M. parvella*

Fig. 133. Dorsal view of body of male.

Fig. 134. Ventral spines of first tibia.

Fig. 135. Ventral spines of second tibia.

Fig. 136. Palpal tarsus.

Fig. 137. Base of palpal tarsus with another view of basal tarsal hook.

general the color is a dull reddish brown with carapace lighter in head region and along central region; abdomen is irregularly

yellowish through the center and much darker on lateral sides; the body is much flattened dorsoventrally with lateral sides nearly parallel; the first coxa has the ventral hook well developed and the second femur is provided with the corresponding groove and ridge; Figures 136-137 show the most important features of the palpal basal tarsal hook and other parts of the palpal tarsus. The female is unknown.

MICRATHENA PATRUELIS (C. L. Koch), 1839

(Figures 138-145)

Aerosoma patruale C. L. Koch, 1839

Plectana patruela Walckenaer, 1841

P. rediviana Walckenaer, 1841

M. rediviana Simon, 1895

M. patruelis F. P.-Cambridge, 1904

M. rediviana F. P.-Cambridge, 1904

A. patruale Banks, 1909

M. patruelis Petrunkevitch, 1911

M. patruelis Reimoser, 1917

M. patruelis Chickering, 1931

M. retracta Chamberlin and Ivie, 1936. New synonymy

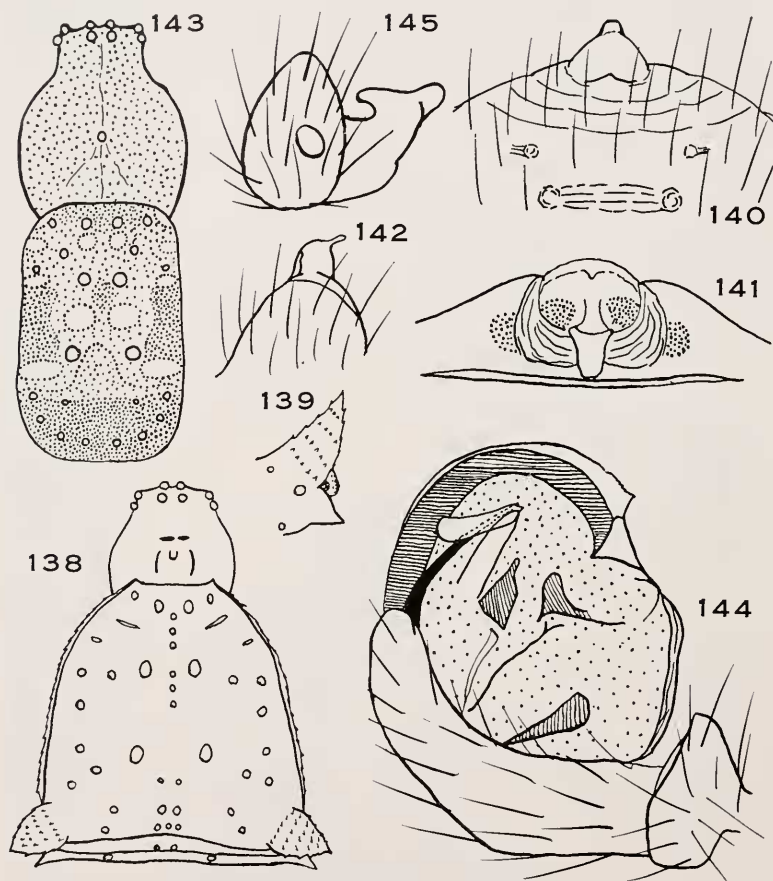
M. patruelis Roewer, 1942

M. patruelis Bonnet, 1957

It is quite apparent that much confusion concerning this species has existed in the past and I fear it is not yet entirely removed. I am quite certain that *M. retracta* Chamberlin and Ivie is the same as the species regarded as *M. patruelis* (C. L. Koch), but I am not entirely satisfied that the latter, as now understood, is one species alone. Kraus (1955) has recently identified *M. saccata* (C. L. Koch), 1836 among his collections from El Salvador. It seems to me that this raises the whole question of relationships between these two species and it is my opinion that all available collections of both species should be carefully studied in an endeavor to clarify the whole matter. At present I cannot do better than to consider all specimens which I have had an opportunity to study as belonging to *M. patruelis* (C. L. Koch) as I have indicated.

Female hypotype. Total length 6.305 mm. Carapace only slightly raised behind median thoracic fovea; lateral margins with numerous setigerous tubercles. Sternum moderately convex; lateral tubercles extending toward intervals between second and third coxae, third and fourth, and both fourth coxae quite

marked. Abdomen with a pair of very short anterolateral tubercles where spines so often occur in many species; with a pair of posterolateral spines on each side with the upper one robust and



External Anatomy of *Micrathena*

Figures 138-145, *M. patruelis*

Fig. 138. Dorsal view of body of female.

Fig. 139. Abdominal spines at posterolateral corner.

Figs. 140-142. Epigynum from below, in posterior view, and profile from right side, respectively.

Fig. 143. Dorsal view of body of male.

Fig. 144. Palpal tibia and tarsus of male.

Fig. 145. Palpal tibia and basal tarsal hook in different view.

projecting dorsally and the lower one much smaller and directed posteriorly (Figs. 138-139); lateral margins and more dorsal of the abdominal spines with minute denticles. Epigynum as shown in Figures 140-142. Color in alcohol: Carapace and legs with varying shades of brown; sternum dark brown; abdomen nearly white above because of subchitinous granules but with dark brown or black margins; venter and lateral sides dark brown with many lighter stripes. Considerable variation has been noted among available specimens in respect to color pattern. General appearance shown in Figure 138.

Male hypotype. Total length 3.77 mm. First and second femora with long spines above but only a terminal pair below; with many setigerous tubercles. First and second tibiae with numerous modified spines. Only one prolateral spine on first and second patellae as compared to two on each as mentioned by F. P.-Cambridge. The usual coxal hook and femoral groove and ridge are present. Palpal features are shown in Figures 144-145.

Collection records. The species has been reported from Mexico, through Central America and into northern South America. I have it for study from several parts of Panama, Honduras, Nicaragua, Costa Rica, and Mexico. The male and female hypotypes are both from Barro Colorado Island, C. Z., August, 1936 and July, 1954, respectively.

MICRATHENA PETERSI (Taczanowski), 1872

Acrosoma petersi Taczanowski, 1872

A. petersi Keyserling, 1898

M. petersi F. P.-Cambridge, 1904

M. petersi Petrunkevitch, 1911

M. petersi Reimoser, 1917

M. petersi Banks, 1929

M. petersi Roewer, 1942

M. petersi Bonnet, 1957

Taczanowski described this species from Guiana. Keyserling recorded it from Guatemala and described it from an immature female. I have many immature specimens of *M. sexspinosa* (Hahn) which closely resemble Keyserling's figures and description. The specimens identified by Banks (1929) are all immature and, according to my present view, all belong to *M. sexspinosa* (Hahn). For these reasons I am not regarding *M. petersi* (Taczanowski) as a Central American species.

MICRATHENA QUADRISERRATA F. P.-Cambridge, 1904

(Figures 146-149)

M. quadriserrata Petrunkevitch, 1911*M. quadriserrata* Reimoser, 1917*M. quadriserrata* Banks, 1929*M. quadriserrata* Roewer, 1942*M. quadriserrata* Bonnet, 1957

F. P.-Cambridge (1904) had the original specimens from Guatemala; Banks (1929) recorded it from Panama; I have collected it in Panama on several occasions. It has been reported from South America but there seems to be some uncertainty about the exactness of the identifications from this part of the world. The male remains unknown as an adult.

Female hypotype. Total length 6.37 mm. The carapace is very gibbous behind the median fovea. The sternum is slightly convex. Abdomen: there is a pair of long anterior spines extending far over the carapace; two pairs of small lateral marginal spines; the abdomen is bifurcated posteriorly and each bifurcation is subdivided into four fairly robust spines (Fig. 146). The most important epigynal features are shown in Figures 147-149. The

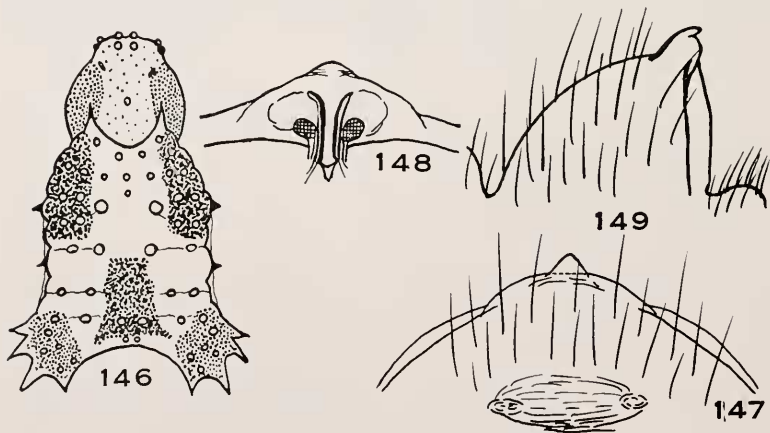
External Anatomy of *Micrathena*Figures 146-149, *M. quadriserrata*

Fig. 146. Dorsal view of body of female.

Figs. 147-149. Epigynum from below, in posterior view, and in profile from right side, respectively.

most common color pattern is suggested in Figure 146; the unstippled areas are white and the stippled areas are black or gray; numerous specimens show that the color pattern is highly variable; in some the whole dorsum is black. In a specimen in the British Museum (Natural History), collected in Joinville, Brazil, there were a total of nine pairs of spines because of the multiplication of small lateral spines to four on each side. The number and placement of spines in Panamanian specimens seem to be quite consistent.

I have several immature males in my collection which I am, for the present, regarding as the missing males in this species but none is sufficiently mature to warrant description.

Collection records. The species has been recorded from both Guatemala and Panama in Central America and from Brazil and Venezuela in South America. I have taken the species repeatedly on Barro Colorado Island, C. Z., at France Field, and at Fort Sheridan, C. Z.

MICRATHENA SACCATA (C. L. Koch), 1836

Acrosoma saccatum C. L. Koch, 1836

Plectana saccata Walckenaer, 1841

M. saccata Simon, 1895

M. saccata Petrunkevitch, 1911

M. saccata Reimoser, 1917

M. saccata Roewer, 1942

M. saccata Kraus, 1955

M. saccata Bonnet, 1957

Until recently this species has been considered exclusively South American in distribution. Kraus (1955) reported it from several localities in El Salvador. Of course, caution is indicated here but it seems probable that the species has been confused with *M. patruelis* (C. L. Koch) which it very closely resembles and which is probably very common in El Salvador. For these reasons I am not regarding the species as definitely established in Central America.

MICRATHENA SAGITTATA (Walckenaer), 1841

(Figures 150-156)

Plectana sagittata Walckenaer, 1841

Epeira spinea Hentz, 1850

Acrosoma bovinum Thorell, 1859

A. bovinum Thorell, 1868

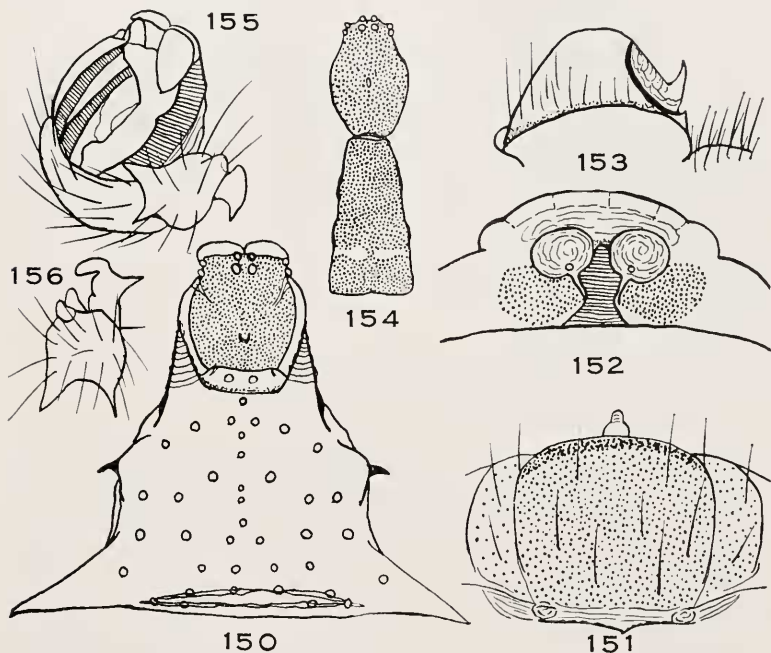
- A. spincum* Emerton, 1884
A. spincum McCook, 1893
A. spincum Emerton, 1902
M. sagittata F. P.-Cambridge, 1904
M. sagittata Petrunkevitch, 1911
M. sagittata Reimoser, 1917
M. sagittata Petrunkevitch, 1930
M. sagittata Roewer, 1942
M. sagittata Kaston, 1948
M. sagittata Levi, 1954
M. sagittata Bonnet, 1957

This species has been figured and at least partially described many times but the male is not easily separated from that of several other species. *M. sagittata* is widely distributed throughout the United States, Central America, West Indies, and the northern parts of South America.

Female hypotype. Total length 8.45 mm. The cephalic portion of the carapace is prominently raised; considerably gibbous behind the median fovea. The sternum is quite convex; with three pairs of lateral tubercles; the posterior end is strongly tubercular between the bases of the fourth coxae. Abdomen: with a pair of long anterior spines arising from dorsolateral positions (not anterior border) and extending far forward but not closely contiguous to the carapace; a pair of short lateral, somewhat recurved spines arise a little behind the middle; a pair of long robust posterolateral spines; each of the latter has a small cusp at its base (often lacking in certain specimens) (Fig. 150). The epigynum is more distinctive than usual; the free part of the scape appears very different than in most species when viewed in profile (Figs. 151-153). Color in alcohol: dorsum of abdomen largely yellowish with the long spines reddish at bases and black at tips; lateral sides of abdomen with broken stripes of yellow and black; the cephalothorax is reddish brown with a conspicuous whitish yellow margin.

Male hypotype. Total length 4.5 mm. The shape of the body seems to vary somewhat among numerous specimens but the shape of the hypotype is shown in Figure 154 and is regarded as fairly typical. The color is dark brown dorsally with obscure whitish spots as indicated by the unstippled areas. Palp: the tibia is provided with two robust spines, a feature not usually shown in descriptions or published figures; the tarsal hook is rather distinctive (Figs. 155-156). There is no ventral coxal hook on the first coxa and no proximal prolateral groove or

ridge on the second femur (eight males from North Carolina and Colombia examined). Some specimens show the abdominal spines, so conspicuous in females, as plainly suppressed spines in the form of tubercles thus changing the form of the abdomen considerably. This was especially true of the South American forms.



External Anatomy of *Micrathena*

Figures 150-156, *M. sagittata*

Fig. 150. Dorsal view of body of female.

Figs. 151-153. Epigynum from below, in posterior view, and in profile from right side, respectively.

Fig. 154. Dorsal view of body of male.

Fig. 155. Left palpal tibia and tarsus.

Fig. 156. Left palpal tibia and basal tarsal hook in different view.

Collection records. F. P.-Cambridge had the species from Mexico and Guatemala. Specimens from Mexico and Costa Rica are in the collection in the Museum of Comparative Zoology at Harvard College. Petrunkevitch (1930) has recorded it from

Puerto Rico. I found numerous specimens from northern South America in the British Museum (Natural History). It is well known from many parts of the United States. It has not, however, appeared in my Panamanian collections. The male hypotype is from Balsam Gap, North Carolina, August, 1930; the female hypotype is from Vera Cruz, Medias Aguas, Mexico, with no date of collection given.

MICRATHENA SCHREIBERSI (Perty), 1833

(Figures 157-168)

Acrosoma schreibersi Perty, 1833

A. spinosum C. L. Koch, 1836

Plectana macracantha Walckenaer, 1841

M. schreibersi Simon, 1895

M. schreibersi F. P.-Cambridge, 1904

M. schreibersi Petrunkevitch, 1911

M. schreibersi Reimoser, 1917

A. schreibersi Banks, 1929

M. coleophora Chamberlin and Ivie, 1936. New synonymy.

M. schreibersi Roewer, 1942

M. schreibersi Bonnet, 1957

This is a well known and strikingly beautiful species characteristic of South America but now known to be one of the most common members of the genus in Panama. Banks, apparently, had the male properly identified but he did not report it in his paper (1929). *M. coleophora* Chamberlin and Ivie is, quite plainly, the male of this species.

Female hypotype. Total length, including the posterior abdominal spines and the somewhat protruding bases of the chelicerae, 14.3 mm. The size appears to be quite variable as determined from a study of a large number of individuals. There are ten spines on the abdomen (Fig. 157). The head portion is strongly raised and the carapace is moderately swollen behind the median fovea. The sternum is only moderately convex with the anterior border swollen into a low transverse ridge. The epigynum is quite distinctive (Figs. 158-160). The color in alcohol is fairly typical of the species in general; the legs are a rich dark brown; the carapace is a similar brown with a yellowish-white margin; the abdomen is yellowish-white in the middle of the dorsum with nearly black margins; the anterior spines are white with the second pair nearly black; the fourth pair is bright red with black tips; the posterior pair is nearly black. The color pattern,

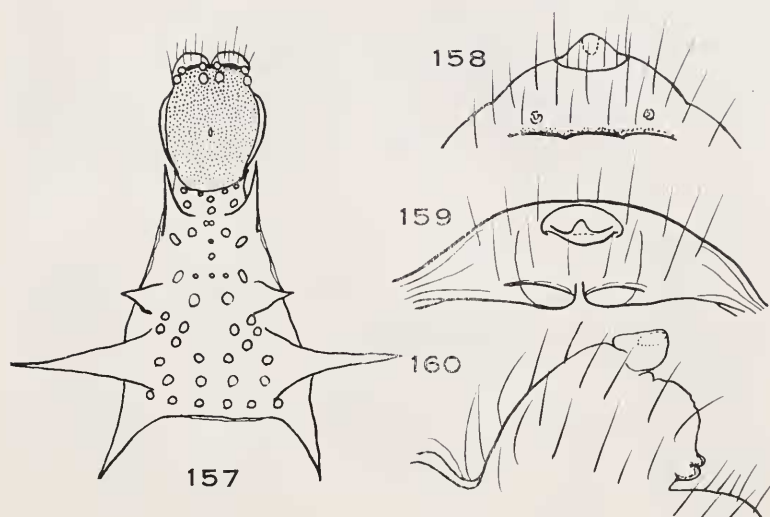
External Anatomy of *Micrathena*Figures 157-160, *M. schreibersi*

Fig. 157. Dorsal view of body of female.

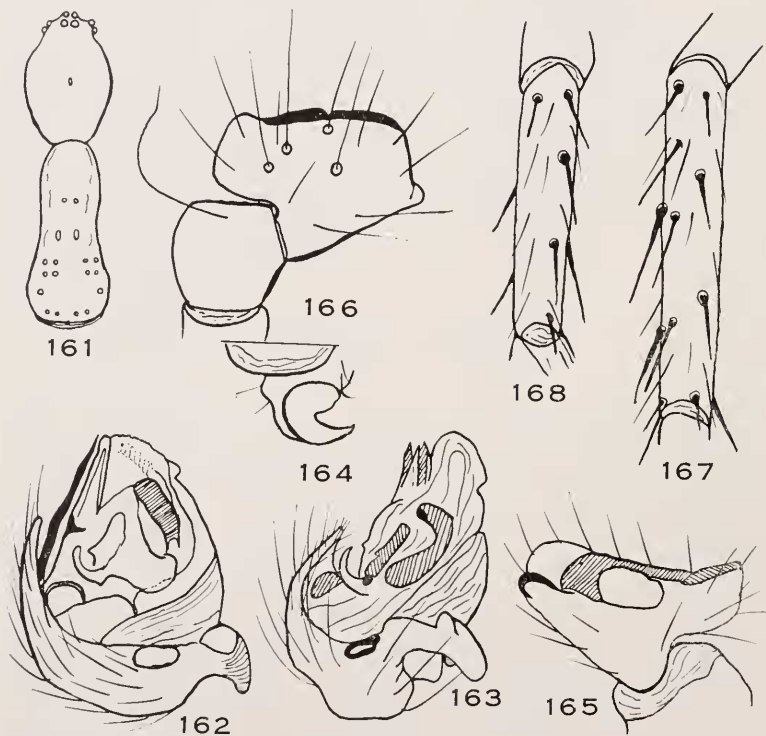
Figs. 158-160. Epigynum from below, in posterior view, and in profile (right side and somewhat more enlarged), respectively.

however, is highly variable as noted in a large series. One specimen from Colombia, for example, had bright yellow legs and a very dark body.

Male hypotype. Total length 5.395 mm. The shape and general appearance (Fig. 161) should serve to identify the males of this species without much difficulty. The color is reddish brown with variations. The abdomen is rounded behind and constricted near the middle. Ventral spines on the first and second tibiae are shown in Figures 167-168. Palp: the tibia appears to be rather distinctive in shape; the basal tarsal hook and other important features of the palpal tarsus are shown in Figures 162-166. There is no ventral hook on the first coxa and no corresponding groove and ridge on the second femur.

Collection records. The species has been reported from numerous localities in South America, Mexico, and Panama. It is probably widely distributed through Central America. It appears to be one of the two most common species of the genus on

Barro Colorado Island, C. Z., but is much less common elsewhere in Panama where I have collected. Both sexes are in my collection from Barro Colorado Island taken from June to August, 1934, 1936, 1939, 1950, 1954 and also in January 1958. I also have it from C. Z. Forest Reserve, 1939; France Field, C. Z., August, 1939; Peluca Hydrographic Station, Boqueron River, Panama, July, 1950.



External Anatomy of *Micrathena*

Figures 161-168, *M. schreibersi*

Fig. 161. Dorsal view of body of male.

Figs. 162-163. Left palpal tarsus and basal tarsal hook; two different views.

Fig. 164. Basal palpal tarsal hook; seen from distal end of tarsus.

Figs. 165-166. Two different views of left palpal patella and tibia.

Figs. 167-168. Right first and second tibiae, respectively, showing spines; seen in ventral view.

MICRATHENA SERRATA F. P.-Cambridge, 1904

(Figures 169-173)

M. serrata Petrunkevitch, 1911*M. serrata* Reimoser, 1917*M. serrata* Chickering, 1936*M. serrata* Roewer, 1942*M. serrata* Bonnet, 1957

This species seems to be very uncommon in collections. I had my first opportunity to study the species carefully during my period of work in the British Museum (Natural History) in the summer of 1958. The species was reported from Barro Colorado Island in my collection of 1934 (1936) but the specimens are not now in the collection and, hence, the correctness of the identification cannot now be determined.

Female hypotype. The following facts are taken from a cotype in the British Museum (Natural History): Total length from

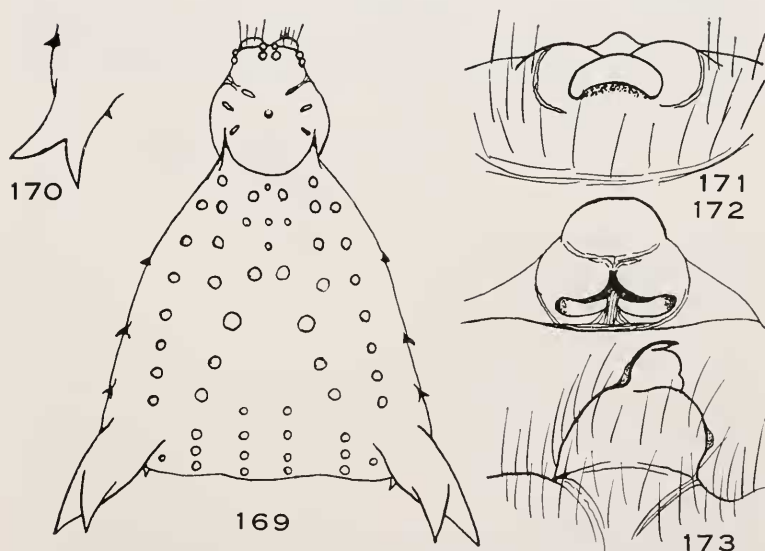
External Anatomy of *Micrathena*Figures 169-173, *M. serrata*

Fig. 169. Dorsal view of body of female.

Fig. 170. Spines at posterolateral corner of abdomen; right side.

Figs. 171-173. Epigynum from below, and in posterior view, and in profile from right side, respectively.

chelicerae to posterior end of abdomen (exclusive of posterior spines) 7.47 mm.; length to tip of posterior spines 8.07 mm. Carapace 2.28 mm. long, 2.08 mm. wide at level of interval between second and third coxae where it is widest. Height of clypeus slightly less than diameter of AME. Carapace considerably raised behind conspicuously rounded central fovea; with three pairs of dorsolateral foveae (Fig. 169). Viewed from in front, anterior row of eyes slightly recurved, posterior row slightly procurved. Chelicerae with four teeth along promargin of fang groove and three along retromargin. Sternum only slightly convex; with posterior end slightly tubercular. Abdomen: extends forward over the carapace a moderate extent; general form and seven pairs of spines as shown in Figures 169-170. Features of the epigynum shown in Figures 171-173. The species would seem to be closely related to *M. duodecimspinosa* (O. P.-Cambridge). The male is unknown.

Collection records. The original specimens were all from the highlands of Chiriqui, El Volcan, Panama. I have recently found two specimens in the Banks collection in the Museum of Comparative Zoology from La Verbena, Costa Rica, (Tristan) which appear to belong to this species.

MICRATHENA SEXSPINOSA (Hahn), 1822

(Figures 174-180)

Epeira sexspinosa Hahn, 1822

E. furcata Hahn, 1822

Aerosoma sexspinosa Hahn, 1834

Plectana squamosa Walekenaer, 1841

A. obtusospinosa Keyserling, 1863

Keyserlingia cornigera O. P.-Cambridge, 1890. New synonymy.

A. calcaratum O. P.-Cambridge, 1890

A. obtusospinum Keyserling, 1892

A. calcaratum Keyserling, 1892

A. sedes Getaz, 1893

M. sexspinosa Simon, 1895

M. obtusospina F. P.-Cambridge, 1904

M. cornigera F. P.-Cambridge, 1904. New synonymy.

M. sedes F. P.-Cambridge, 1904

A. obtusispina Banks, 1909

A. sexspinosa Banks, 1909

M. obtusospinosa Petrunkevitch, 1911

M. sexspinosa Petrunkevitch, 1911

M. sedes Petrunkevitch, 1911

M. cornigera Petrunkevitch, 1911. New synonymy.

M. cornigera Reimoser, 1917. New synonymy.

M. scerspina Reimoser, 1917

M. cornigera Petrunkevitch, 1925. New synonymy.

M. obtusispina Banks, 1929

M. cornigera Banks, 1929. New synonymy.

M. scerspina Petrunkevitch, 1930

M. cornigera Roewer, 1942

M. scerspina Roewer, 1942

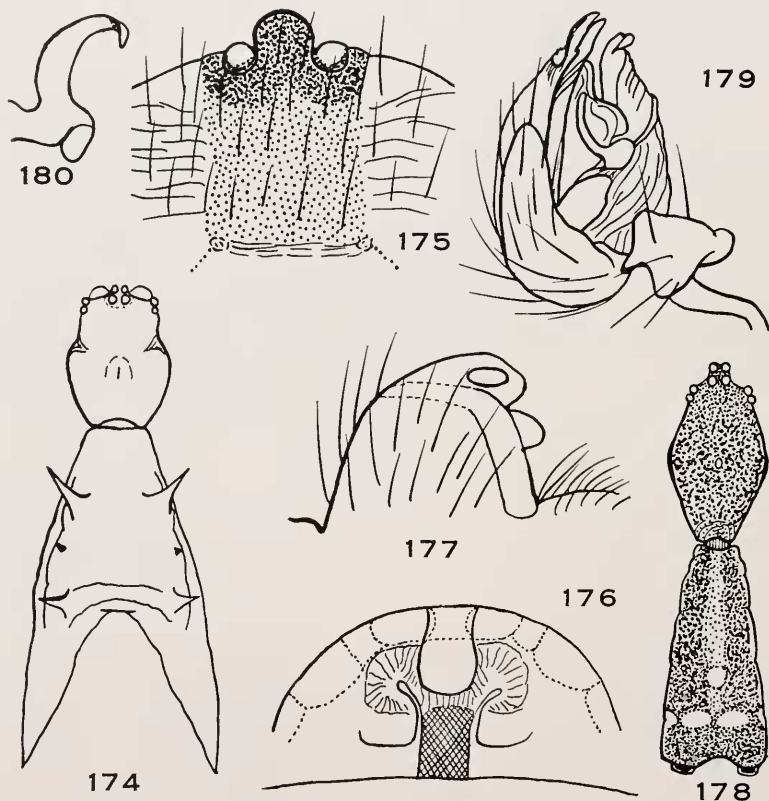
M. scerspina Kraus, 1955

M. cornigera Bonnet, 1957. New synonymy.

It now seems necessary to accept the complicated synonymy the essentials of which are given above but I cannot regard *M. forcipata* (Thorell) as a synonym for *M. scerspina* (Hahn) as Reimoser (1917), Roewer (1942), and Bonnet (1957) have done. The Cuban specimens of *M. forcipata* (Thorell) are clearly distinct from *M. scerspina* (Hahn), as I shall try to show in a forthcoming paper. The specimens labelled *M. sedes* (Getaz) in the Museum of Comparative Zoology are, in my opinion, all immature females of *M. scerspina* (Hahn). Immature females have four pairs of abdominal spines and then, with the last moult the pair between the surviving two pairs of dorsolateral spines is often suppressed. Usually remains of these suppressed spines can be found even in fully matured specimens. Banks (1929) concluded that his *A. cornigera* O. P.-Cambridge was the male of *M. scerspina* but he did not formally synonymize it with the latter. Other bibliographers have continued to keep the two separate. Now I think we can be certain of the synonymy as I have given it above.

Female hypotype. Total length 16.25 mm. The cephalic part of the carapace is strongly raised; the median fovea is a shallow groove rather than a pit. The sternum is quite convex; it bears paired tubercles opposite coxae one to three and a posterior tubercle extends between fourth coxae. The femora, especially the first two, are well supplied with setigerous tubercles. The features of the epigynum are shown in Figures 175-177. Abdomen: with three pairs of well developed spines and with another pair represented by tubercles as shown in Figure 174. Color: The carapace is a rich dark reddish brown with a whitish margin; dorsally the abdomen is a mosaic of whitish spots and streaks intermixed with reddish and black spots and streaks; the intermixture is quite variable but rather characteristic of the species.

Male hypotype. Total length 5.59 mm. General form as shown in Figure 178. Color: the dorsal surface is a mahogany brown with light spots and light margin as indicated in the figure. The most distinctive feature appears to be the long curved process belonging to the tarsal hook; this and other palpal features are shown in Figures 179-180. The coxal hook and the corresponding femoral ridge and groove are all lacking.



External Anatomy of *Micrathena*

Figures 174-180, *M. sexspinosa*

Fig. 174. Body of female; dorsal view.

Figs. 175-177. Epigynum from below, in posterior view, and in profile from right side, respectively.

Fig. 178. Body of male; dorsal view.

Fig. 179. Palpal tibia and tarsus of male.

Fig. 180. Basal tarsal hook.

Collection records. The male and female hypotypes are from Barro Colorado Island, C. Z., July and August, 1954, respectively. The species is well known from many localities in Central America, South America, and the West Indies. It appears to be one of the two most abundant species on Barro Colorado Island.

MICRATHENA SPINULATA F. P.-Cambridge, 1904

(Figures 181-184)

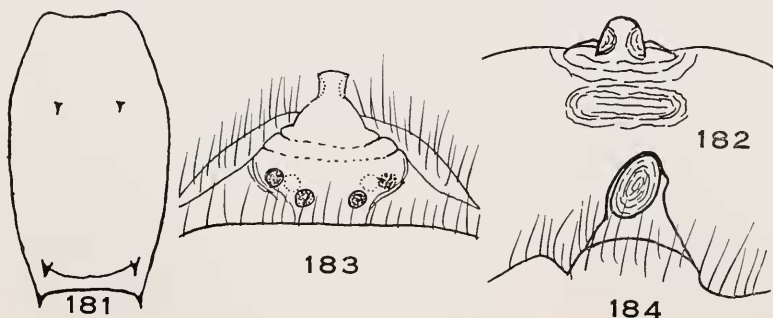
M. spinulata Petrunkevitch, 1911

M. spinulata Reimoser, 1917

M. spinulata Roewer, 1942

M. spinulata Bonnet, 1957

This species seems to be extremely rare in collections. Apparently it has not been recorded since the original specimens were collected in Mexico and studied by the author of the species. He had only females. During my period of work in the British Museum (Natural History) in the summer of 1958 I found the specimens studied by the author and identified the individual used for F. P.-Cambridge's drawings. This specimen should be regarded as the lectotype and indicated as such.



External Anatomy of *Micrathena*

Figures 181-184, *M. spinulata*

Fig. 181. Abdomen of female; dorsal view.

Figs. 182-184. Epigynum from below, in posterior view, and in profile from right side, respectively.

Lectotype. Total length 6.175 mm. Color pattern essentially as given by the author of the species but I have noted considerable variation in the pattern among the various available specimens. The median thoracic fovea is well defined together with

three pairs of dorsolateral foveae. Sternum only slightly convex; only slightly raised opposite the coxae. There are six abdominal spines but all are hardly more than spinules (Fig. 181). The epigynum is similar to that of *M. gracilis* (Figs. 182-184). The species is still only known from Mexico and, as far as I have been able to learn, only from the original collections.

MICRATHIENA STRIATA F. P.-Cambridge, 1904

(Figures 185-188)

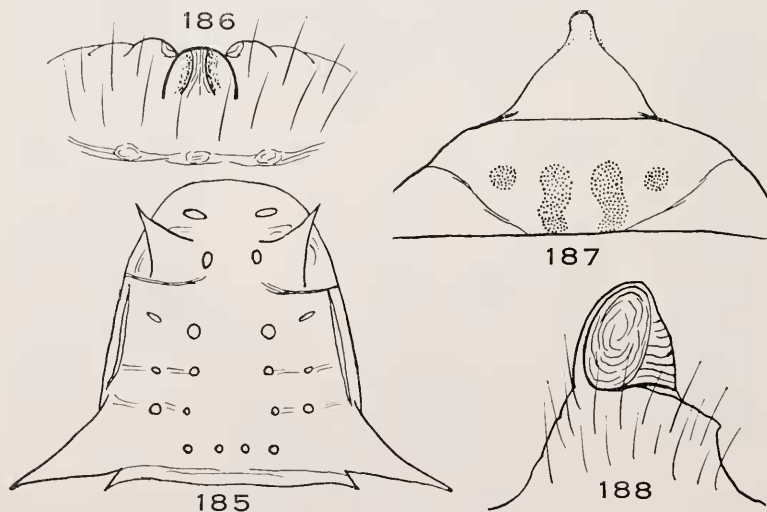
M. striata Petrunkevitch, 1911

M. striata Reimoser, 1917

M. striata Roewer, 1942

M. striata Bonnet, 1957

This is another very rare species in collections. My only opportunity to study it also came during my period of work in the British Museum (Natural History) in the summer of 1958. It seems highly probable that I was able to identify the specimen



External Anatomy of *Micrathena*

Figures 185-188, *M. striata*

Fig. 185. Abdomen of female; dorsal view.

Figs. 186-188. Epigynum from below, in posterior view, and in profile from right side, respectively.

which the author of the species used as a basis for his description and I have indicated that this should be designated the lectotype. Numerous specimens from Guatemala are available for study. The total length is about 8 mm. The carapace has a well defined central fovea but no dorsolateral foveae. The sternum is essentially like that of *M. spinulata*. The abdominal spines and general form of the abdomen are shown in Figure 185. The essential features of the epigynum are shown in Figures 186-188. The color of the abdomen is yellow with a series of narrow black lateral lines. The species is apparently known only from Guatemala and only from the female.

MICRATHENA SUBFLAVA sp. nov.

(Figures 189-193)

Female holotype. Total length from AME to posterior border of abdomen 8.515 mm. Carapace considerably overlapped by abdomen; about 2.925 mm. long; 2.405 mm. wide opposite interval between second and third coxae where it is widest; strongly gibbous just behind the well defined median fovea; without well defined dorsolateral foveae.

Eyes. Eight in two rows as usual; viewed from above, both rows moderately recurved; viewed from in front, anterior row gently recurved, posterior row gently procurved, all measured by centers. Central ocular quadrangle slightly wider behind than in front, slightly wider behind than long. Ratio of eyes $AME : ALE : PME : PLE = 10 : 8.5 : 12 : 8$. AME separated from one another by four-fifths of their diameter, from ALE by four times their diameter. PME separated from one another by five-sixths of their diameter, from PLE by ten-thirds of their diameter. Height of clypeus equal to three-fifths of the diameter of AME.

Chelicerae. Robust, quite gibbous in front; typical of females in the genus. With a well defined fang groove having four teeth along the promargin and three along the retromargin (some variation noted between right and left sides).

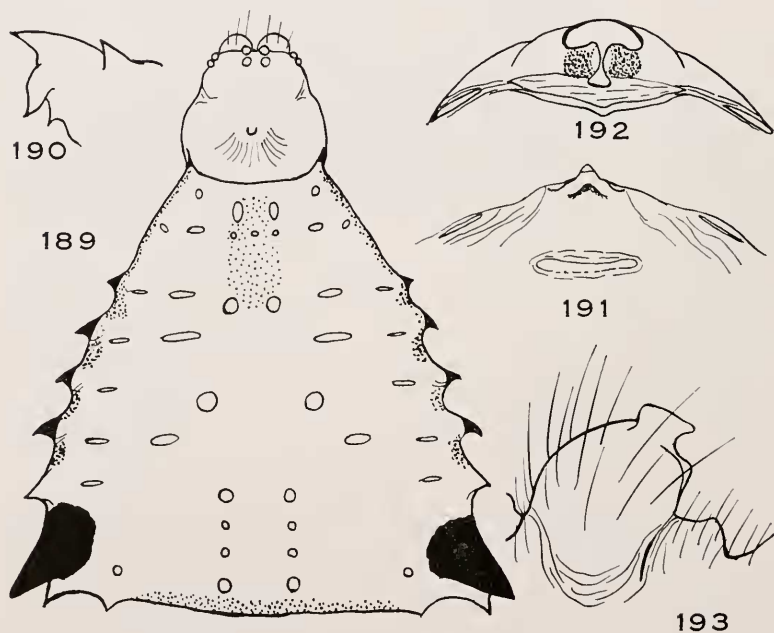
Maxillae and Lip. Quite typical of the genus; details regarded as unnoteworthy for adequate description of the species.

Sternum. Moderately convex; with seven tubercles as commonly occur in the genus; continued between fourth coxae which are separated by about three-fourths of their width.

Legs. 4123. Width of first patella at "knee" .29241 mm., tibial index of first leg 10. Width of fourth patella at "knee" .30324 mm., tibial index of fourth leg 12.

	Femora	Patellae	Tibiae	Metatarsi	Tarsi	Totals
	(All measurements in millimeters)					
1.	2.925	.975	1.950	1.625	.740	8.215
2.	2.470	.942	1.570	1.495	.740	7.217
3.	1.950	.650	.975	.910	.585	5.070
4.	3.250	.845	1.755	1.950	.750	8.550

With many setigerous tubercles on legs but only a few spines with details of spination regarded as unnoteworthy.



External Anatomy of *Micrathena*

Figures 189-193, *M. subflava*

Fig. 189. Body of female; dorsal view.

Fig. 190. Spines at posterolateral angle of abdomen; lateral view.

Figs. 191-193. Epigynum from below, in posterior view, and in profile from right side, respectively.

Abdomen. General features as shown in Figures 189-190. Considerably flattened dorsoventrally; only slightly concave in middle of posterior dorsal region; with nine pairs of short spines as figured but the first pair of lateral marginal spines is often reduced to blunt tubercles in paratypes. A prominent tubercle or short robust spine lies on each side of the chitinous cone surrounding the spinnerets.

Epigynum. The general characteristics of this organ are shown in Figures 191-193.

Color in alcohol. Legs, in general, a dull brown with some variations; sternum a dusky yellow; carapace yellowish with fine brownish dots. Abdomen: main part of dorsum yellowish with variations; irregularly black along the lateral margins and posterior border; lateral sides with narrow broken black stripes alternating with yellowish stripes; region of epigynum and cone around spinnerets reddish brown.

Type locality. Holotype female from Barro Colorado Island, C. Z., August, 1950. Several paratype females from the same locality: June, 1934; June-August, 1936; June, 1939; July-August, 1954. The male is unknown.

MICRATHENA SUBSPINOSA F. P.-Cambridge, 1904

(Figures 194-197)

M. subspinosa Petrunkevitch, 1911

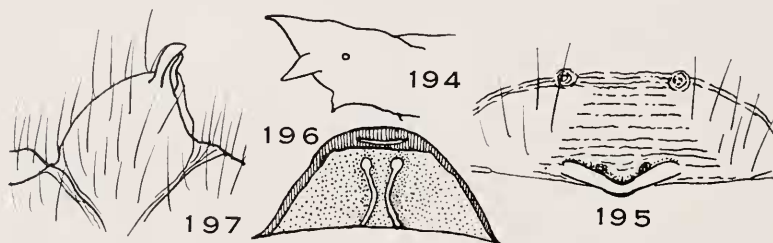
M. subspinosa Reimoser, 1917

M. subspinosa Roewer, 1942

M. subspinosa Bonnet, 1957

The correct treatment of this species is not at all clear. I have wavered between the decision to regard it as a variant of *M. duodecimspinosa* (O. P.-Cambridge) and retaining it as a valid species and have finally decided on the latter course, at least for the present. I had an opportunity to study the type in the British Museum (Natural History). The author of the species gave the important features very briefly as follows: "almost precisely similar to *M. 12-spinosa* in general character, but the third, lower cusp on the posterior bifid spur is remote from the two main cusps in the middle of the spur behind, and thus becomes trifid. The posterior margin of the vulva, though presenting a minute median angle, has not a tongue-like prominence which is noticeable in *M. 12-spinosa*." Color: "similar to that of *M. 12-spinosa*, the posterior spurs dark brown, apically black."

The length is about 6 mm. Figure 194 is intended to show relationships among the spines at the posterolateral angle of the abdomen. Figures 195-197 are intended to show the chief features of the epigynum. Known only from Guatemala and only from the female.



External Anatomy of *Micrathena*

Figures 194-197, *M. subspinosa*

Fig. 194. Spines at posterolateral angle of abdomen; lateral view.

Figs. 195-197. Epigynum from below, in posterior view, and in profile from right side, respectively.

MICRATHENA TRAPA (Getaz), 1891

Aerosoma trapa Getaz, 1891

M. trapa F. P.-Cambridge, 1904

M. trapa Petrunkevitch, 1911

M. trapa Reimoser, 1917

M. trapa Roewer, 1942

M. trapa Bonnet, 1957

F. P.-Cambridge (1904) did not include any description of this species and did not include it in his keys. The brief description given by Reimoser (1917) was copied from the statement given by the author of the species and gives little basis for its recognition. It seems probable that the species exists among others which are better known and well described. The male is unknown. I have been obliged to omit the species from further consideration in this paper.

MICRATHENA TRISERRATA F. P.-Cambridge, 1904

(Figures 198-201)

Aerosoma triserrata Banks, 1909

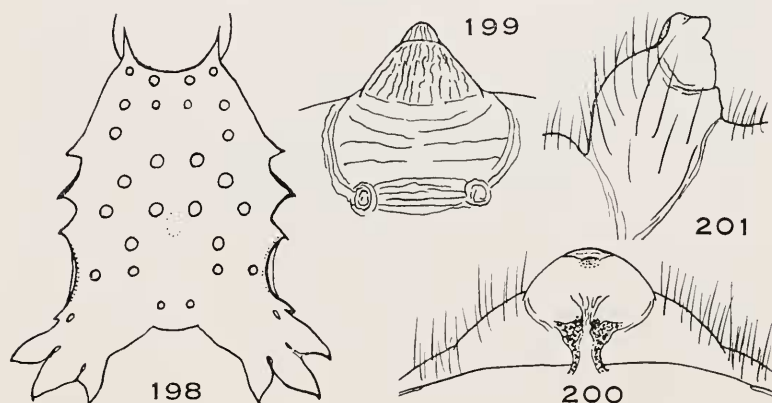
M. triserrata Petrunkevitch, 1911

M. triserrata Reimoser, 1917

M. triserrata Roewer, 1942

M. triserrata Bonnet, 1957

Specimens in the Pickard-Cambridge collection from Guatemala and Costa Rica have been studied and a lectotype selected. The following facts are taken from the lectotype in the British Museum (Natural History): Total length from AME to posterior end of the triserrated abdominal fork 8.13 mm. Carapace with a well defined central fovea behind which is a marked gibbosity; there are also three pairs of dorsolateral foveae; the head is considerably raised and separated from the thoracic part by diagonal grooves. The sternum is only slightly convex and somewhat granulose. In addition to the abdominal spines shown in F. P.-Cambridge's figures and named in his description is, apparently, a small lateral marginal spine at base of the fork on each side (Fig. 198), but it appears to be somewhat variable.



External Anatomy of *Micrathena*

Figures 198-201, *M. triserrata*

Fig. 198. Abdomen of female; dorsal view.

Figs. 199-201. Epigynum from below, in posterior view, and in profile from right side, respectively.

On the lectotype this small spine is unilateral (possibly lost in handling), barely represented in one paratype, and lacking on the third specimen. Features of the epigynum are shown in Figures 199-201. The male is unknown. The species is known only from Guatemala and Costa Rica.

MICRATHENA UNCATA F. P.-Cambridge, 1904

(Figures 202-205)

M. uncata Petrunkevitch, 1911*M. uncata* Reimoser, 1917*M. uncata* Roewer, 1942*M. uncata* Bonnet, 1957

This is another species which appears in collections only very rarely. Apparently it has not been reported until the present time since its first appearance in the collections studied by F. P.-Cambridge (1904). I appear to have two specimens which belong here. Only males are known.

Male hypotype. Total length 4.5 mm. The general appearance (Fig. 202) is similar to that of *M. parallela* (O. P.-Cambridge). The first two pairs of tibiae do not have the modified short ventral spines recorded by F. P.-Cambridge; the first pair of femora has a series of ventral and prolateral spines probably modified for clasping (Fig. 203); the second pair of femora seems to be devoid of these; the ventral hook is lacking on the first coxa and the corresponding ridge and groove on the second femur are also lacking. The main features of the palpal tarsus are shown in Figures 204-205. Color: Carapace with a broad, median, light brownish stripe and a broad brown stripe on each side (Fig. 202); the abdomen is light yellowish dorsally and with numerous irregular white flecks and small indications of black spots at anterior and posterolateral corners.

Collection records. F. P.-Cambridge had this species only from Guatemala. The hypotype and one other specimen are from Barro Colorado Island, C. Z., August, 1939.

MICRATHENA VITOSA (O. P.-Cambridge, 1890)

(Figures 206-210)

Acrosoma vitiosum O. P.-Cambridge, 1890*A. vitiosum* Keyserling, 1892*M. vitiosa* F. P.-Cambridge, 1904*M. vitiosa* Petrunkevitch, 1911*M. vitiosa* Reimoser, 1917*M. vitiosa* Roewer, 1942*M. vitiosa* Bonnet, 1957

While working in the British Museum (Natural History) in the summer of 1958 I had my only opportunity to study this

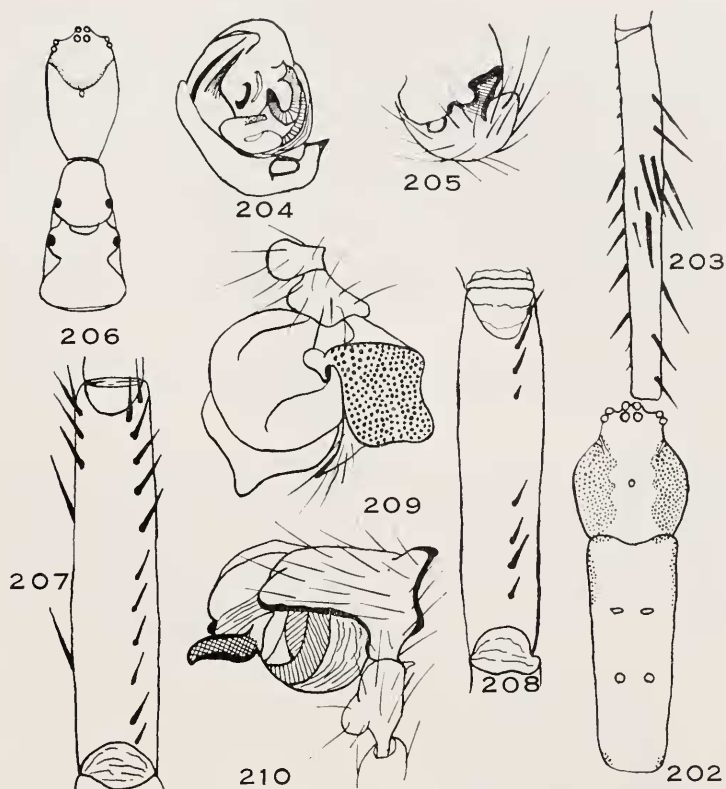
External Anatomy of *Micrathena*Figures 202-205, *M. uncata*Figures 206-210, *M. vitiosa*

Fig. 202. Dorsal view of body of male.

Fig. 203. Left first femur; ventral and prolateral spines.

Fig. 204. Left palpal tarsus.

Fig. 205. Another view of basal tarsal hook.

Fig. 206. Dorsal view of body of male (from O. P.-C.).

Figs. 207-208. First and second femora, respectively; ventral views.

Figs. 209-210. Right palpal patella, tibia, and tarsus; 209 especially to show form of basal tarsal hook.

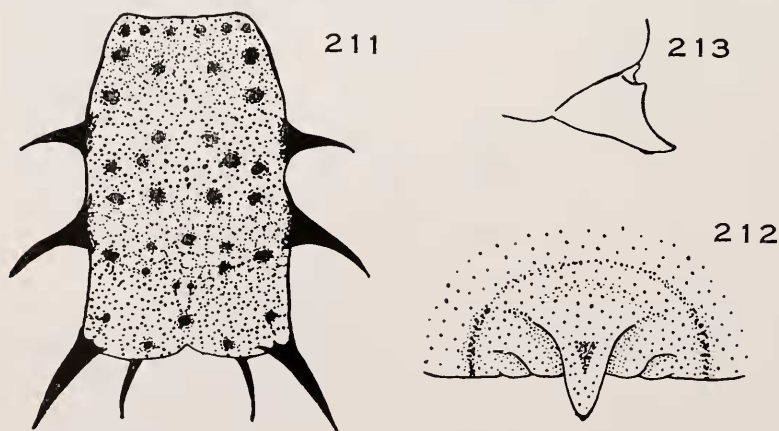
species. I found two specimens in the Cambridge collection and one of these should be selected as the lectotype. The Pickard-Cambridges had the species from Panama and Keyserling

(1892) reported it from Guatemala but I did not find these specimens in the Keyserling collection. The total length is about 4.5 mm. The general form of the body is shown in Figure 206. The first and second tibiae appeared to be spined in what may be termed the usual manner. The first and second femora, however, seemed to have special ventral spines as shown in Figures 207-208. The third femur also has a row of spur-like ventral spines. The most important features of the palp are shown in Figures 209-210. The tarsal hook is particularly distinctive. There is no ventral hook on the first coxa nor any ridge or groove on the second femur. The female is completely unknown.

MICRATHENA ZILCHI Kraus, 1955

(Figures 211-213)

The holotype and several mature paratypes as well as several more immature specimens were reported by Dr. Kraus in 1955 from El Salvador. I know of no mature specimens of this species in American collections. I have one immature female from Honduras which I am tentatively assigning to this species. Only females are known. Some of the distinctive features of the species, taken directly from the original description, may be



External Anatomy of *Micrathena*

Figures 211-213, *M. zilchi*

Fig. 211. Dorsal view of abdomen of female.

Figs. 212-213. Epigynum from below and in profile, respectively.

given as follows: Total length 14 mm.; central ocular quadrangle almost square; PME larger than AME; general shape of abdomen and spination as shown in Figure 211; the epigynum appears as shown in Figures 212-213; the color of the abdomen is bright, reddish yellow. The author of the species regards it as closely related to *M. xanthopyga* Simon, 1895 from Venezuela. The accompanying figures have been copied directly from those furnished with the original description.

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